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THE ORGANIZATION OF WORK IN RESIDENTIAL CONSTRUCTION (NEW HAMPSHIRE)

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THE ORGANIZATION OF WORK IN RESIDENTIAL CONSTRUCTION

by

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A DISSERTATION

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DEDICATION

This dissertation is dedicated to my wife, Valarie Klitgaard-Ellis. Without her love, inspiration, constructive criticism, computer skills, and support this project would never have come to completion.

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No project of this magnitude is the accomplishment of an individual. There are many people whose guidance, questioning, and knowledge aided my completion of this dissertation.

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All errors and omissions, of course, remain my own.

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This dissertation focuses upon the relations of work in the housebuilding sector of the New Hampshire economy. While changing technology is integrated into the analysis, the primary concentration is upon the organization of work, which includes the development of the technical division of labor, supervision and structures of control, and the degrees of dependence or independence afforded the workers. The study is located within the theoretical context of the subordination of labor to capital. Analysts of the labor process have asserted that the formal subordination of labor to capital exists when private ownership and the relations of wage labor and capital have emerged, but control at the point of production remains with the workers. The real subordination of labor to capital requires a fundamental transformation of the labor process, the deskilling of workers, and the assertion of control of work relations by owners and managers.

This dissertation develops the contention that skill levels of carpenters have remained high, as has their degree in independence and control over the basic decisions of

production, because residential construction in New Hampshire remains organized under the structure of the formal subordination of labor to capital. This organization of the industry is established in two empirical chapters, based on in-depth interviews with a small sample of carpenters and buildings contractors. The first empirical chapter establishes the dominance of the small firm and the untransformed nature of the labor process, while the second develops the position that although firms become more "business-like" as they grow in volume, even the largest firms in the state have not transformed the organization of work to a sufficient degree for the establishment of the real subordination of labor to capital. A third empirical chapter analyzes data which shows that organized resistance to construction management is minimal, and that this is attributable to the continued independence and incentives for the development of skills found in this sector.

CHAPTER I

INTRODUCTION

For years Marxian economists have directed their attention towards the problem of capital accumulation. However, it has been only recently that political economists have begun to refocus their research towards the conditions of work at the point of production. In 1974 the publication of Harry Braverman's classic work, **Labor and Monopoly Capital**, rekindled debate over the nature of work and its relation to accumulation. Braverman argues that the search for greater profits led capitalists to reorder the labor process by technological and organizational means in order to appropriate ever greater amounts of surplus labor. The resulting separation of conception from execution degrades the humanity of those upon whom the system is imposed. In concrete historical terms, capitalist development entails the eclipse of craftwork by lower cost methods of capitalist production. In this process workers are deskilled.

Braverman boldly asserts that such deskilling is a basic feature of the history of the capitalist labor process. Methods to separate conception from execution have been forced upon industrial workers, and are also being imposed upon clerical and service employees. In short, the process of proletarianization is an inevitable feature of capitalism.

Many writers have been drawn into this debate since the late 1970's. One school of thought has further developed the "inevitability of proletarianization" argument by concentrating on the nature of the accumulation process and the relations of surplus value. Another school extends the research of dual and segmented labor markets into the study of the labor process. The writers in this group contend that capitalist development and efforts to control the point of production have resulted in a differentiated work force rather than a homogenized proletariat. Still other scholars, mainly from the discipline of labor history, have published case studies on the details of work relations. Most of these studies have analyzed the manufacturing and clerical sectors. Surprisingly, few studies have been directed towards contemporary craft industries.

In this dissertation I plan to extend the current literature of the labor process by focussing on the organization of work in the residential construction industry. In Chapter II I present a detailed review of the historical, theoretical, and concrete literature of the labor process. Included in this chapter is a development of the important debates that have been raised since the publication of **Labor and Monopoly Capital**.

In Chapter III, I assert that series of pre-conditions must be met before the development of a mass production industry will occur, and I review the historical writings on the subject. The general historical significance of specialization, extension and stability of product markets,

and the role of the state is counterposed with their specific course of development in the housebuilding sector of the economy.

The third part of this dissertation consists of an empirical case study of the labor process for residential carpenters in Southeastern New Hampshire. Chapter IV reviews the methodology of this empirical study. In Chapter V, data collected by means of in-person interviews are interpreted to ascertain the existence of employer control over the conditions of work, and the degree of deskilling.

Chapter VI concentrates on the transitional nature of housing firms. In this chapter I test for the effect of increased firm size upon the structural conditions which may effect the organization of work. Finally, Chapter VII looks at the degree of resistance and consent that working carpenters exhibit towards the methods of work organization.

In this dissertation I attempt to establish the conditions of the labor process and the degree of employer control in a single geographical region of the country. I am in no way attempting to argue that the work relations found in southeastern New Hampshire will also be found in other areas of the nation and the world which exhibit substantially different structural conditions.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Much has been written in the last decade about the development of large scale industry and its effects upon workers, capitalists, and managers. The literature of the labor process is drawn from a wide range of separate disciplines: from radical industrial sociology, political economy, and labor history. This essay will now review such writings which concern the attempts to transform a willful, independent working class into the dependent and docile agents of capital accumulation. This will also require an analysis of capital accumulation itself. In this chapter I will link the conditions necessary for the production of profits with the development of systems to control workers through changes in technology and the organization of work.

In the first volume of **Capital**, Karl Marx posed and developed the idea that "the process of capitalist production" is "the unity of a labor process and a valorization process."[1] Surplus value, or unpaid labor, is extracted from workers in the process of production. This value is realized as profit when commodities are sold, and such profits are then reinvested in order to expand production. However, as Anwar Shaikh points out, this process of self expanding value is neither

smooth nor harmonious, but plagued by contradictions, conflicts, and crises in its attempts to reproduce itself:

> ...it is important to realize that any explanation of how capitalism reproduces itself is at the same time (implicitly or explicitly) an answer to the question of how and why non-reproduction occurs, and vice versa: in other words, the analysis of reproduction and the analysis of crises are inseparable,"[2] [emphasis in the original].

After reviewing neo-classical and Keynesian variants of capitalism's ability to reproduce, Shaikh states:

> Lastly, there is the position that, though capitalism is capable of self-expansion, the accumulation process deepens the internal contradictions on which it is based, until they erupt in a crisis: the limits to capitalism are internal to it. This line is almost exclusively Marxist, and includes both 'falling rate of profit' and 'profit squeeze' explanations of crises," [3] [emphasis in original].

The bulk of theoretical development within the traditions of Marxian political economy in the years since Marx's death evolved towards explaining the nature of capitalism's ability to valorize surplus value, reproduce, and self-expand. Many of the major works of twentieth century theoretical Marxism were focused towards explaining the nature of capitalist crises. Little work was published despite Marx's dictum on the role of the labor process, despite Marx's dictum, and Christian Palloix's even stronger claim that it is the "heart" of the economy.

The Importance of Harry Braverman's Labor and Monopoly Capital

This trend was reversed in 1974 with the publication of Harry Braverman's **Labor and Monopoly Capital (LMC).** Beginning with Marx's distinction between labor (the concrete expression of work as a use value) and labor power (the ability to work bought and sold as a commodity) Braverman develops an analysis of the capitalist labor process as one in which the traditional physical and mental skills possessed by workers are degraded by the dictates of capital accumulation and capitalist reproduction. LMC has proved to be a watershed work; spawning a wealth of literature tying the nature of work to the process of capital accumulation, as well as provoking a healthy debate. Nearly all writers within the labor process tradition pose their work within the context of Braverman's opus - either as extenders of his analysis or as critics.

In the foreward to **Labor and Monopoly Capital** Braverman's friend and collaborator, Paul Sweezy, stated that he and colleague Paul Baran had not given a complete picture of capitalist society in their own volume, **Monopoly Capital**, as they consciously neglected the labor process which was a focal point of Marx's own analysis. The lacunae of **Monopoly Capital** were finally to be filled by Braverman's **LMC**:

> Now at last, in Harry Braverman's work published nearly a decade later, we have

> a serious, and in my judgement solidly successful, effort to fill a large part of this gap. It would be hard to describe this effort more accurately or concisely than 'as an attempt to inquire systematically into the consequences of which the particular kinds of technological change characteristic of the monopoly capitalist period have for the nature work [and] the composition (and differentiation) of the working class.[5]

Citing parts of this passage in the introduction to **Case Studies in the Labor Process**, editor Andrew Zimbalist acknowledges the inspiration drawn from Braverman's work. Zimbalist notes that a series of important sociological (and mostly non-Marxist) studies of the workplace were conducted in the 1950's. However, the topic seemed to disappear from the academic research agenda during the 1960's: "...as the focus on civil rights and Vietnam consumed the energy of progressive and intellectual forces, while economic prosperity reinforced the illusive 'American Dream' of the working class."[6]

Zimbalist accordingly acknowledges Braverman's work as the spark which rekindled serious academic research on the subject:

> The timeliness as well as the substantive depth of **Labor and Monopoly Capital** has made it the seminal study for current work in the field. As such it has been the focus of criticism as well as praise.[7]

The Inevitable Proletarianization School

The debate over the labor process, galvanized by publication of **LMC**, has evolved into two major schools. The first is that the inexoriable march of capital accumulation will inevitably result in the proletarianization of workers and the degradation of traditional skills as capitalist development reduces complex labor to simple, abstract labor. The writers holding this view are predominantly Marxian value theorists attempting to integrate the labor process within the scope of capital accumulation and reproduction. Amongst them is Christian Palloix who ties technologically derived changes in skill requirements as well as modern management strategies of work humanization and job enrichment to the broader process of uneven development: "The first thing to get clear is that we can only understand the labor process if we understand the relationship between the productive system and the movement of capital."[8]

The link between the productive system (or the modes of organizing the production of use values and commodities) and the movement of capital (or process of valorization and accumulation), is to be found in the production of surplus-product, or surplus value. Attempts to valorize capital and reproduce on an extended scale, necessitate the extraction of surplus value either by what Palloix terms extensive means (prolongation of the working day or intensification of work - Marx's "absolute surplus value") or by intensive means (raising productivity and thereby lowering prices in

the wage goods sector which decreases the costs and value of reproducing labor power - or "relative surplus value"). The creation of a hierarchy based on specialization as methods by which capitalists attempt to accomplish their goals of accumulation result in a degraded work life for the majority, with a simultaneous "hyperskilling" of a small strata of technicians and managers.

> Mental and manual labour in the technical division of labour are subject to the same general law of extraction of maximum surplus labour from the maximum number of individual labour powers, but that same law produces contradictory effects upon mental and manual labour: whereas it seeks to produce the maximum dequalification of the maximum portion of manual labourers, it seeks to produce the maximum skill in the smallest proportion of mental labourers."[9]

In short, both a deskilled manual working class and a highly skilled, yet unproductive,[10] strata are created by the logic of capitalist development.

Braverman himself can be placed within this "inevitability of degraded skills" school. Braverman's main thesis, that workers are deskilled, is not a static one. Deskilling is the result of a historical process, that of accumulation of capital. "Marx shows how the processes of production are, in capitalist society, incessantly transformed under the impetus of the principal driving force of that society, the accumulation of capital."[11] Throughout the chapters of **LMC**, reviewed herein, Braverman attempts to establish how the strategies of capital and its hired

managers were used to habituate and control workers in the interests of profit and the extended reproduction of capital. It is those strategies of work organization and technological change which have reduced the skill content of modern work.

Despite Braverman's linking of the changing nature of work to the process of capital accumulation, he is criticized from the left for not taking the analysis far enough. In "Valorization and `Deskilling': A Critique of Braverman," Tony Elger argues that LMC has provided an important advance in the understanding of the nature of capitalism:

> Braverman's work has been central to the return of attention to the study of the capitalist labour process...Braverman's **Labour and Monopoly Capital** has been one of the most influential contributions to this development and remains the fullest restatement to date of some of the fundamental themes of such an analysis. His work has served as both point of reference and inspiration for many current analyses of the transformation undergone by the labour process, the changing structure of employment and class composition, and the sources of wage labour in the era of `monopoly capitalism.'[12]

Despite his homage to Braverman, Elger argues that LMC contains several important flaws in the conceptualization of the labor process within the broader context of the valorization of capital. These flaws, in part, stem from Braverman's extension of the concept of monopoly capitalism employed by Baran and Sweezy:

> Their work enables him (a) to ignore any exploration of the contradictions and struggles which beset mechanization in the form of the tendency and countertendencies to the falling rate of profit, and (b) to take for granted the capacity of capitals to finance the apparatus of `conception' and control, which constitutes the counterpoint to deskilling, out of a rising surplus.[13]

Elger further argues that Braverman places an inordinate emphasis on craft skill as an obstacle to capital accumulation, and he believes such an analysis is difficult to reconcile with the historical record. For Elger, the craftworker possessing the unity of mental and manual skills had largely disappeared before the capitalism that is covered by **LMC**. In addition, Elger cites the Brighton Labor Process group's criticism that Braverman's conception of the independent and willful craftworker fails to illustrate the intricate subtleties of how "craft competence may be embedded within a complex structure of collective labour effectively subordinated to capital accumulation."[14]

Elger argues that a complete understanding of the labor process should focus not on the concrete process of deskilling, but upon the theoretical basis of the conditions of valorization embodied in Marx's distinction between the formal and real subordination of labor to capital:

> The crucial implication of this approach is that capital transforms the general

> social and technical organization of the labour process... to achieve a more adequate basis for valorization. The key aspect of this argument is that real subordination is the achievement of the reorganization of the whole complex of the capitalist labor process. It cannot be understood at the level of the individual worker's relation to the mechanisms of production as it is in Braverman's discussion of deskilling."[15]

Elger also argues that the subordination of labor to capital approach would incorporate worker resistance and class struggle as mediated by the "reserve army of the unemployed." Elger accuses Braverman of divorcing the labor process from the broader forces of political domination and struggle.[16] The implications of the "subordination of labor to capital" approach will be addressed in detail in the capital accumulation section of this literature review.

The Non-Inevitability Schools

The second fundamental position within the theoretical labor process debates is that degraded work relations need not inevitably result from the logic of capital accumulation. Some analysts of this school base their position upon previously developed work on internal labor markets and labor market segmentation (e.g. Edwards, Reich, Gordon, Piore), where they observed negotiated work rules in large capitalist firms. Others arrived at their analysis from backgrounds of industrial sociology, steeped in the Weberian tradition of bureaucracy (Burawoy, Clawson,

Jackson). Most theorists of this school have impressive Marxist credentials and have used **Labor and Monopoly Capital** both as a focal point of criticism of their respective academic disciplines but primarily as a starting point for extending Marxist analysis to industrial (and craft) conditions that developed since Marx's death.

In attempting to underscore the historical development of segmented labor markets where the conditions of work, levels of skill and degrees of arbitrary management control show marked disparities between the primary labor market (good jobs) and the secondary labor labor market (bad jobs), David Gordon, Richard Edwards, and Michael Reich confront the need to analyze the labor process, as well as labor markets, within the context of capitalist development. The earlier empirical and theoretical work of Gordon et. al. and their colleagues[17] has shown not a homogenization of the working class, but a division. After dismissing the neo-conservative "End of Ideology" view, Gordon, et. al. state:

> A second major strand of analysis of working class divisions was best articulated in the classic work of Harry Braverman (1974). Early Marxist projections had advanced a kind of "wait and see" perspective on persistent working class divisions. Although the working class may seem divided now, the continuing degradation of work under capitalism will inexorably homogenize the conditions that working people confront on the job. Braverman's analysis elevated this perspective to a more coherant and sophisticated plateau.

> He argued that capitalist dynamics continually transform the labor process, increasingly subjugating workers to their employers and fragmenting their jobs...Braverman's work has helped consolidate the fundamental validity of the Marxian emphasis on capitalist labor process. Nonetheless, his work seems insufficient for understanding the working class in advanced capitalist societies and the forces affecting working class consciousness...In general, we argue, while many working people experience mechanization, specialization, and intensive supervisory control on the job, the principal economic forces operating on the U.S. working class in the recent period have not created greater homogeneity, at least in the simple version envisioned by Braverman.[18]

This passage summarizes and extends work published independently by Richard Edwards in 1979. In **Contested Terrain**, Edwards describes Braverman's analysis of Taylor's principle of "the separation of conception from execution", integral to capitalist control, as "brilliant." Yet, Edwards also argues that Braverman fails to consider the process of re-skilling whereby a fraction of technical workers exhibit increasing rather than decreasing skill levels. Edwards ties these skill differentials to separate "systems of control" by arguing that there are essentially three types of control that emerge from the conditions of capitalist development: simple, technical, and bureaucratic. Moreover, applications of these different systems are in large part responsible for the segmentation of labor markets. Edwards (1978) contends that Braverman's view of an all-embracing control by capitalists, flowing from the

application of the separation of conception and execution, to be inaccurate. Capitalists simply failed to systematically apply Taylor's system of Scientific Management. He also criticizes Braverman's analysis in **LMC** for failing to consider the response of workers, especially through union organization, to management attempts at deskilling via changes in work organization.[19]

However, other followers of the non-inevitability school are far more sympathetic to Braverman. In **Bureaucracy and the Labor Process** (1980, Dan CLawson states: "readers of Harry Braverman's **Labor and Monopoly Capital** (1974) will recognize that my argument is completely compatible with (although not identical to) the position contained in that book."[20] While Clawson reviews the tendencies towards proletarianization as an outcome of capital's drive to appropriate ever greater amounts of surplus value for extended reproduction, he also views **Capital** as a political work. Marx analyzed the inner logic and contradictions of capitalism as a tool for its eventual demise, and Clawson adopts this view as his own: "...my ultimate political purpose is to argue for the possibility of creating a society where there is both material abundance and interesting democratically controlled work..."[21] He critiques orthodox industrial sociology as the source of "The Inevitability Argument." Clawson maintains that the Weberian tradition is one in which an essentially classless bureaucracy emerges because it is the only way to organize

the work of society on a large scale to produce material abundance. Clawson's work clearly sees Marxian political economy as an alternative to the orthodox dichotomy of either poverty or degraded jobs. De-skilling is not an inevitable result of efficiency but the consequence of specific class-based strategies.

As such, Clawson tacitly accepts Edwards' criticism of the lack of class struggle in **LMC** but rejects that concerning the lack of application of the Taylor system:

> The claim that Braverman overestimates the impact of Taylorism is based on two errors. On the one hand, the critics have once again made judgements based on inadequate investigation. My research shows that even by the strictest criteria, Taylorism had a giant impact. On the other hand, this criticism is based on a failure to understand what was involved in Taylorism. Braverman was concerned not with the surface appearance of Taylorism, with the specific mechanics of his system, but rather the way in which Taylorism marked a fundamental change in the control of the labor process.[22]

Focusing on the latter view of Taylorism, Clawson proceeds to trace management attempts not only to deskill individual machinists but also to destroy the system of skilled worker control known as inside contracting. Moreover, Clawson contends and establishes that the application of Taylorist practices was met with resistance, from disruption at the point of production to Congressional hearings, concluding that the workers he studied struggled

intensely to maintain their traditional skills and control over the organization of work.

On the other hand, another Marxist sociologist, Michael Burawoy, argues that the analysis of **LMC** is incomplete in that Braverman did not consider the role of incentives (which were a fundamental component of the Taylorist system) in creating a climate of complicity at the point of production. Burawoy's book, **Manufacturing Consent**, is based on the Marxism of Antonio Gramsci and focuses on the creation of structures of ideology whereby the ruling capitalist elite governs not solely by coercion but by establishing relations of consent among the ruled. While Burawoy does not claim to have the only interpretation of Marxism, he certainly argues for its superiority:

> It should not be inferred that there are no other Marxist approaches to the labor process. The most prominent and comprehensive of these is Harry Braverman's **Labor and Monopoly Capital**... No one writing on the labor process in 1978, particularly those writing within a Marxist tradition, were uninfluenced by this creative rehabilitation of Marx's own theory of the labor process. As I have elaborated at length elsewhere, the approach I adopt here has been largely shaped in opposition to many of the dominant themes of **Labor and Monopoly Capital**.[23]

Burawoy utilizes the participant-observer methodology more prevalent in sociology then in political economy to analyze work relations in the machine shops of Allied Corporation, a manufacturer of heavy equipment. While he

tends to overgeneralize from the personal experience of one case study, Burawoy develops two rather important insights. Theoretically he argues that capitalism must reproduce capitalist relations in production, as well as surplus value, in order to exist. The concrete structures of internal labor markets - institutions which transform production relations at the enterprise levels, such as collective bargaining and grievance procedure (termed the "internal state")[24] - as well as incentives, serve to provide this hegemony. Like Braverman, however, Burawoy assumes firms have the financial wherewithal to establish these conditions.

An additional insight of **Manufacturing Consent** is that the relations of internal labor markets and the internal state create a set of circumscribed choices for those employed which radically alters the predictions of proletarianization envisioned by Braverman in **LMC**:

> In identifying the separation of conception from execution, the expropriation of skill, or the narrowing of the scope of discretion as the tendency in the development of the capitalist labor process, Harry Braverman missed the equally important parallel tendency toward the expansion of choices within those even narrower limits. It is the latter tendency that constitutes a basis of consent and allows the degradation of work to pursue its course without continuing crisis.[25]

To summarize, the publication of **LMC** spawned an intense debate over the nature of work and its relation to the reproduction of capitalism in the twentieth century. The

participants in this debate range from value theorists, operating on a very high level of abstraction, to those analysts focusing on concrete situations in specific case studies. The relevant question raised is not one of, "Does the process of capital accumulation influence the labor process?," but one of "To what degree does the accumulation of capital shape the labor process?"

This literature review now turns to a brief synopsis of the writings on the influence of capital accumulation advanced by analysts of the labor process.

Labor and Labor Power

Having defined capital as self-expanding value, Marx saw the accumulation of capital, or extended reproduction, as a necessary feature of capitalism's continued existence. The forces of accumulation assert themselves across a broad social and economic spectrum encompassing both production and realization as well as both individual capitalists and the interaction of the many capitals. Yet, as Palloix argues when he poses the labor process as the "heart" of the economy, the Marxian analysis of capital accumulation focuses initially on sphere of production. More specifically, accumulation is rooted in the production of surplus value.

Utilizing, but expanding upon the pre-existing labor theory of value, Marx posited that commodities exchange at their values. In developing the "general form of value" (M-

C-M'), Marx argued that value - in addition to the cost price of commodities - must be created in production if the capitalist were to realize a greater sum of money at the end of a production period than he/she started with. The nature of capital accumulation revolves around the special quality of the commodities purchased: labor power and means of production. Marx was extremely careful to separate labor power, or a human's ability to work, which is exchanged as a commodity, from labor which is the concrete result of human effort (and, in Marxian terms, a use-value). Braverman elaborated upon this distinction in **LMC** stating: "The labor process therefore begins with a contract or agreement governing the conditions of the sale of labor power by the worker and its purchase by the employer."[26]

The worker exchanges his/her ability to work for a wage while the capitalist receives the ownership of the product created by that labor. The worker, however, does not give up his/her ability to work. On the contrary, it is a human being's capacity to apply these abilities in different ways that give rise to the increases in a society's output. Unlike animals, humans have the ability to conceive abstractly of an end product and the process of producing it, as well as engaging in the actual physical labor of producing. Braverman defines this uniquely human characteristic as the unity of conception and execution:

> Human labor..., because it is informed and directed by an understanding which has been socially and culturally developed, is capable of a vast range of productive activities. The active labor processes which reside in potential in the labor power of humans are so diverse as to type, manner of performance, etc., that for all practical purposes they may be said to be infinite, all the more so as new modes of labor can easily be invented more rapidly than they can be exploited. The capitalist finds in this infinitely malleable character of human labor the essential resources for the expansion of his capital.[27]

The human creative capacity is not the only valuable entity within the labor process. While the purchase and sale of labor power is governed by contract and the principle of equivalent exchange, the number of hours that a worker toils for the contracted wage and the intensity of that labor are subject to the discretion of the owner of commodity inputs and outputs. The more value in excess of the agreed upon wage a capitalist can extract from his/her workers, the greater the mass of surplus value, from which both profits and the funds for accumulation arise. The history of capitalist development can be explained in part by efforts of individual capitalists to mold the conditions at the point of production so as to extract the maximum feasible surplus value.

Capitalists however, are not free to shape the labor process solely in accord with their individual needs by their own free will. The action of the individual capitalist is mediated by the actions of his or her rivals through the process of competition. With little control over

output prices, this process can only be accomplished through reducing the unit cost of production. In "The Logic of Capitalist Expansion" (1972), Richard Edwards expands upon Marx's contention when he argues that while a particularly greedy capitalist can create intolerable conditions at the workplace and a benevolent one may improve them, the characteristics of the individual capitalist do not form the basic determinants of the wage labor/capital relationship. Capitalists do not exploit workers because they are inherently evil people (which they may or may not be). Capitalists exploit workers because they are capitalists, and raising the rate of surplus value, also known as the rate of exploitation, is necessary for continuation as a capitalist. Edwards argues that if a "humane" capitalist reduced the rate of exploitation by raising wages above market rates or refused to implement alienating and degrading technologies, he or she would eventually be driven out of business as less "humane" and more "efficient" capitalists would reduce selling price below the cost price of the high wage capitalist.

Abstract and Concrete Labor

This theory of accumulation is based upon the labor theory of value whereby the value of a commodity is determined by the human labor embodied in its production. This theory, advanced to its pre-Marixan apogee by David Ricardo, held that machinery was merely dated human labor.

Yet Marx did far more than just adopt Ricardo's theory. He transformed it into a far more sophisticated version by the explicit addition of the theory of surplus value. In the Introduction to the Ben Fowkes translation of **Capital**, Ernest Mandel states:

> Marx's labour theory of value is a further development and perfection of the labour theory of value as it emanated from the `classical' school of political economy, and especially of Ricardo's version. But the changes Marx brought into that theory were manifold. One especially was to be decisive: the use of the concept of abstract social labor as the foundation of his theory of value. It is for this reason that Marx cannot be considered in any way an `advanced neo-Ricardian.' `Labor quantities as the essence of value' is something quite different from `labor quantities as `numeraire' - a common measuring rod of the value of all commodities. The distinction between concrete labour, which determines the use value of commodities, and abstract labour, which determines their value, is a revolutionary step forward beyond Ricardo of which Marx was very proud; indeed he considered it his main achievement, together with the discovery of the general category of surplus value, encompassing profit, interest and rent.[29] [emphasis in original].

The concept of "abstract labor" operates, of course, at a very high level of abstraction in the realm of value theory. It is not the same as "de-skilled" or "simple labor" in the sense used by Braverman and others writing about the labor process, but is, instead, the universal expression of all concrete labors. In fully capitalist production (or commodity society), labor is private rather

than social. Therefore, labor must somehow be socialized to acquire the universal characteristics, that is labor independent of the particular type of work being done, in general necessitated by the notion of abstract labor. This occurs in the sphere of exchange where the commodities exchange based not upon their use-values (or concrete characteristics), but upon their value. In the process of accumulation it is not a different character of use-values that the capitalist strives for, it is more money - the universal equivalent of commodities. In the analysis of I. I. Rubin, the mechanism of exchange abstracts from these concrete properties and valorization is developed not on the basis of particular use values but on the process that socially equalizes labor.

Rubin sees abstract labor as both socially and historically determined rather than physiologically determined - that is, it is a mistake to mechanically equate abstract labor with simple labor. Abstract labor is a social form because it arises from the alienation of individual labor. In commodity society, individual labor is privately held and social interdependence is achieved through buying and selling:

> In Marx's theory or value the transformation of concrete forms of labor into abstract labor is carried out definitively in the process of exchange..., the transformation of concrete into abstract labor is not a theoretical act of abstracting for finding a general unit of measurement.

> This transformation is a real social event. The theoretical expression of this social event, namely the social equalization of different forms of labor and not their physiological equality, is the category of abstract labor.[30] [emphasis in original].

This is not to say that value is created in exchange. Rather, according to Rubin, Marx views exchange as a component part of the broader circuits of capitalist production as a whole, not as an entity unto itself in this instance. Concrete labor still reproduces use values in production and those products of individual private labor are socially equalized through the interdependent process of exchange. "Abstract labor appears and develops to the extent that exchange becomes the social form of production, thus transforming the production process into commodity production. In the absence of exchange as the social form of production, there can be no abstract labor," (31) [emphasis added].

Abstract labor is, in addition, a historical concept because the extent of commodity exchange that determines it is also a product of historical development. Rubin argues that labor was socially equated without exchange in pre-capitalist societies and also in socialist ones. Abstract labor is specific to capitalism. Yet the value relations of capitalism, which were posed by Marx in the early chapters of the first volume of **Capital**, come to fruition only with the generalization of commodity production and exchange. These concrete structures did not appear at once, but

evolved. In the movement from the purchase of a finished commodity by the merchant capitalist to the purchase of labor power by the industrial capitalist, one can locate both the degradation of work and the transformation of concrete labor into abstract labor. Braverman describes the process as one which receives its concrete expression in the detail division of labor:

> The more labor is governed by classified motions which extend across the boundaries of trade and occupations, the more work dissolves its concrete forms into general types of work motions. This mechanical exercise of human facilities according to motion types which are studied independently of the particular type of work being done, brings to life the Marxist conception of "abstract labor." We see that this abstraction from the concrete forms of labor - the simple "expenditure of human labor in general," in Marx's phrase - which Marx employed as a means of clarifying the value of commodities (according to the share of general human labor they embodied), is not something that exists only in the pages of the first chapter of **Capital**, but exists as well in the mind of the capitalist, the manager, the industrial engineer...Labor in the form of standardized motion patterns is labor used as an interchangeable part, and in this form comes ever closer to corresponding, in life, to the abstraction employed by Marx in the analysis of the capitalist mode of production.[32]

As mentioned previously, the beginning chapters of **Capital** were written at a high level of abstraction, presupposing the universal extension of commodity relations into society. However, the rest of the first volume of

Capital is cast on a far more concrete level. In Parts III and IV ("The Production of Absolute Surplus Value" and "The Production of Relative Surplus Value"), Marx traced the evolution and extension of these commodity relations into traditional methods of production. It is from these chapters that most of labor process writers within the Marxian tradition have drawn their inspiration. How the changing technical and social nature of work reflects and influences capital accumulation can be seen in the comments of labor process theorists writing on the transition from the independence of labor in handicraft production to eventual proletarianization in large scale industry.

Absolute and Relative Surplus Value

The ability of capitalists to purchase labor power on the market does not automatically yield a profit. For profits to emerge, more value must be created than the worker is paid by contractual agreement. Assuming that the wage equals the value of labor power, and that any value created in excess of the wage payment will accrue to the capitalist, profits emerge within the context of equivalent exchange. The greater the ratio of unpaid labor to paid labor (which is called both the rate of surplus value and the rate of exploitation), the greater the source of the capitalist's profit. This ratio can be expressed in concrete, hours-of-work terms as: $\frac{\text{surplus labor}}{\text{necessary labor}}$

or in value terms as: $\frac{\text{surplus value}}{\text{variable capital}} = s/v.$[33]

Through the process of extracting and reinvesting surplus value, capitalists turn labor into capital. As Marx expressed it:

> In the process of production labour becomes objectified labour, i.e. capital in opposition to living labour, and in the second place, by absorbing labour into production, by thus appropriating it, the original value becomes value in process and hence value that creates surplus value for itself. It is only because labour is changed into capital in the course of production that we can say that the original quantum of value valorizes itself, that what was at first potentially capital has become capital in actual fact.[34] [emphasis in original].

Different epochs or stages of capitalism have seen different modes of increasing the ratio of surplus labor to necessary labor. Increasing the mass of surplus labor (s) by either lengthening the working day or intensifying the amount of work done in a set work day is called Absolute Surplus Value. Decreasing the value of labor power (v) through increases in productivity which lower the value (and price) of wage goods is termed Relative Surplus Value.

It must be kept in mind that these are value categories and not merely technical ones. While it will be shown that mechanization was the engine that drove increases in productivitiy, merely equating relative surplus value with machines is an oversimplification that confuses levels

of abstraction. To begin with, the lines between absolute and relative surplus value are not always clear and distinct, especially when intensification of the working day is involved. Developing an argument originally advanced by Jesus Ibarrola, Christian Palloix contends that capitalists originally introduced machinery not consciously to decrease the value of wage goods but to increase the intensity of the working day.[35]

Secondly, Marx views relative surplus value as a complex social relation, involving the interaction of the many capitals, not just the individual. Relative surplus value would be increased by decreasing variable capital, the denominator of the rate of surplus value, s/v. Since it is assumed at this point in Marx's **Capital** that all commodities, including labor power, exchange at their values, the decrease in variable capital cannot be correctly interpreted as a cut in wages below the subsistence needs of workers. The value of wage goods must also fall for the exchange of equivalent values to be maintained, and this entails fewer hours of necessary labor being embodied in the production of wage goods.

> Hence a fall in the value of labor power is also brought about by an increase in the productivity of labor, and by a corresponding cheapening of commodities in those industries which supply the elements of constant capital which are required for producing the means of subsistence.[36]

In chapter 15 ("Machinery and Large Scale Industry"), Marx develops the idea that such increases in productivity

are brought about by mechanization. In this sense a dilemma involving levels of abstraction arises. An individual capitalist can mechanize his/her own production process. Indeed, according to Marx the need to reduce the individual value of their commodities below the socially average value and the process of capitalist competition impels them to do so. However, an individual capitalist cannot individually decide to extract surplus value relatively. The process of reducing the value of wage goods is a complex interaction of the producers of wage goods as well as those which produce inputs into the wage goods industries. Despite a tendency towards the concentration and centralization of capital, no individual captialist has the capacity to unilaterally reduce the cost of workers' basic subsistance goods.

Finally, absolute and relative surplus value do not represent historically distinct stages of concrete history. Marx categorized specifically capitalist production as the era of mechanized large scale industry, dominated by the extraction of relative surplus value. In this light the era of manufacture (production by hand) based upon a strict technical division of labor imposed upon old handicraft methods of production, was dominated by the extraction of absolute surplus value. Yet, there was not a one-to-one correspondence between concrete eras and the methods of extracting surplus value. Marx fully acknowledged that vestiges of earlier modes of production could co-exist with

those which dominated a historical era. For example, small scale "Peasant agriculture and production by independent artisans, appear alongside capitalist production long after the disappearance of feudalism."[37]

The categories used by Marx to conceptualize his periods or stages of capitalist development did, however, correspond to the actual conditions of capitalist production. Yet, rather than being static entities, the analysis of the first volume of **Capital** places the various stages as periods of transition in the development of specifically capitalist production. Although part of a continual historical process, various stages are rendered distinct as analytical categories.

To recapture the idea of the historical/theoretical whole, including but going beyond the mode of surplus value extraction, Marx developed the idea of the Subordination of Labor to Capital.

The Subordination of Labor to Capital

In the first volume of **Capital**, Marx conceptualized different epochs or stages of capitalist development on the basis of the methods of extracting surplus value: absolute or relative. Yet, as Andrew Herman (1982) points out, this was not a simple, linear process. In addition to the fine lines of distinction between absolute and relative surplus value, as regards the intensification of work, writers such as Edwards (1979), Kathy Stone (1974), and Bryan Palmer

(1975), chronicle the resistance of workers to management. Such resistance stemmed from the intensification and change in work rules that accompanied mechanization. Also the French Structuralists (such as Poulantzas (1973)), in their theory of social formations, reasoned that several modes of production can co-exist at the same historical conjuncture. More concretely increasing surplus value by prolongation of the working day can exist far into the era of mechanization and relative surplus value.

While acknowledging Marx's dictum that surplus value is the focal point of capital accumulation - being the source of profit - Tony Elger (1979) sees the categories of absolute and relative surplus value as distinct and concrete forms of the appropriation of surplus labor rather than broad historical processes:

> A central feature of an adequate analysis of the transformation of the capitalist labour process, and one inadequately acknowledged by Braverman, must be an attempt to locate the forms, and phases of development, of capitalist control over the labour process more precisely than he attempts to do. This is not merely a matter of specifying the discrete conjuctural conditions which affect the general tendencies which he delineates. It involves a committment to the specification of the relationship between forms of the extraction of surplus value in the process of capital accumulation and phases in the organization of the capitalist labour process.[38]

For Elger and others [Gartman (1979), Herman (1982), Palloix (1976)], this precision is achieved by employing

Marx's concepts of the formal and real subsumption of labor to capital (also referred to as the formal subordination of labor to capital). This analysis was developed most fully by Marx in an 1866 appendix to the first volume of **Capital**, and published in English in 1976 under the title of "Results of the Immediate Process of Production."[39]

This conceptualization of capitalist development begins with the dissolution of the feudal mode of production; that is, the subordination of labor to capital is a process by which formerly independent artisans, organized into guilds, are transformed first into detail workers, stripped of the all-around knowledge of the production of use values, and finally into proletarians having nothing to sell but their ability to work. In this transformation the immediate producer loses control of both the product of his/her labor, and the process by which that product is created. The knowledge and control formerly possessed by workers is placed in the hands of capitalist management. Herman (1979) explains the link between production, valorization, and accumulation when he states:

> In order to expand the production of this surplus, the requirement and result of the accumulation process, the capitalist must control the process of production as well as the product. The corollary of increased capitalist control over the labor process itself is the increased proletarianization of the labor force.[40] [emphasis in original].

Writers stressing the subordination of labor to capital, beginning with Marx, have conceptualized two

distinct phases of subordination. On the abstract level, the distinction is based upon whether labor is fully proletarianized - that is, stripped of ownership of the means of production and forced to sell its ability to work - or still free enough to engage in independent production. In short, the question becomes one of whether capitalists have the ability to purchase labor power as a commodity. On a more concrete level, degrees of subordination can be distinguished by the concrete structures of capitalist control.

The Formal Subordination of Labor to Capital

The first phase of this transition process is termed the formal subordination of labor to capital. The relations of subordination of labor to capital are considered only formal because they are primarily legal and monetary. The superior position of the capitalist is legal in the sense of property realtions, in that the capitalist has property rights over both the product and instruments of labor. Monetary control stems from the relation of wage labor and capital, with the capitalist occupying the top of the hierarchy. Marx dates the emergence of the formal subordination of labor to capital with the dissolution of the feudal guild structure, and the disappearance of the master-journeyman-apprentice relations on a broad scale. The master, having laid down his tools, ceases to be in a superior position based on a greater knowledge of craft

traditions, but now on ownership of the conditions of production.

> The relationship between master and journeyman vanishes. That relationship was determined by the fact that the former was the master of his craft. He now confronts his journeyman only as the owner of capital, while the journeyman is reduced to being a vendor of labor. Before the process of production they all confront each other as commodity owners and their relations involve nothing but money; within the process of production they meet as its components personified the capitalist as `capital,' the immediate producer as `labour,' and their relations are determined by labour as a mere constituent of capital which is valorizing itself.[41] [emphasis in original].

In short, the legal relations of property ownership beget the monetary relations resulting in the inferior position of wage laborers in relation to capitalists.

On the concrete structure side, the subordination of labor to capital is merely formal because the labor process itself is untransformed. Gartman (1978) states that the separation of the worker from the means of production, and the resulting change in property relations, is but a first step in the transition from feudalism to capitalism. During the period of formal subordination, capitalists seized upon a pre-existing labor process. According to both Marx and Elger, the labor process goes on as before, utilizing a mix of skilled and less skilled labor with control of the application of that labor still resting with the workers

themselves.

Marx characterized the formal subordination of labor to capital as being dominated by the extraction of absolute surplus value. Given worker control as well as traditional methods and tools, the opportunities for capitalists to increase productivity are limited by the nature of the production process inherited from earlier modes of production. Elger (1979) summarizes the capitalist's approach to valorization, asserting:

> In this context surplus value is extracted under conditions where the capitalist deploys his market power to extend the length of the working day while the labourer retains some control over the actual process of production. In addition capital may impose a greater intensity and continuity of labour - what Marx sometimes calls a reduction in the `porosity' of the working day - without transforming the customary organization of labour.[42]

The rise of capitalist production, beginning with the purely formal transformation, was predicated on the development of "collective labor."

> Capitalist production only really begins, as we have already seen, when each individual capital simultaneously employs a comparatively large number of workers, and when, as a result, the labour-process is carried on an extensive scale, and yields relatively large quantities of products... With regard to the mode of production itself, manufacture can hardly be distinguished, in its earliest stages, from the handicraft trades of the guilds, except by the greater number of workers simultaneously employed by the same individual capital.[43]

Hence the breaking of guild restrictions which limited both output and employment are cast as a crucial pre-condition for the development of the formal subordination stage of capitalist development. Concomitant with the increase in output and employment comes a rise in the capital necessary for production, for it is only with certain minimum amounts of capital that a capitalist can lay down his or her tools and devote him/herself to directing work and organizing sales.[44]

To summarize, the conditions for the formal subordination of labor to capital include:

1) A monetary relationship between worker and capitalist (or, in Marx's terms, the yielder and appropriator of surplus labor). The dependency of labor on capital results from the capitalist being the owner of the conditions of labor.

2) No fundamental change in the labor process itself. Here the nature of work is much as it was inherited from handicraft production, except that labor is now monetarily and legally subordinated to capital. The immediate result is that workers are more closely supervised and directed by capital, and that labor becomes more continuous and intensive. Despite the decline in the "porosity" of the working day, Marx asserts that the formal subordination of labor to capital is highly favorable to the increased versatility of workers. This is based on the expansion of

products combined with the traditional methods of production.

3) The employment of relatively large numbers of workers and the dissolution of isolated, independent production. This also entails that minimum capital requirements have risen to a degree that the capitalist has ceased to be an immediate producer and devotes full time and effort in organizing production and realization of value.

All the writers surveyed have treated the formal subordination of labor to capital as a transition period. Rather than being a contemporary organization of industry, it is theorized as a period in which the conditions for large-scale mass production industry are developed. Hence, the formal subordination of labor to capital should exhibit different degrees of the aforementioned conditions. For Marx, these conditions were seen as both a prerequisite for, and limitation to the study of the development of specifically capitalist production and large scale mechanized industry.

> The more completely these conditions of labor are mobilized against him [the worker] as alien property, the more effectively the formal relationship between capital and wage labor is established, i.e. the more effectively the formal subsumption of labour under capital is accomplished, and this in turn is the premise and pre-condition of its real subsumption.[45] [emphasis in original].

On the other hand, the committment to the purely formal relation, with its untransformed labor process and traditional methods, serves as a limit to further capitalist development: "But the more capitalist production sticks fast in this formal relationship, the less the relationship itself will evolve, since for the most part it is based on small capitalists who differ only slightly from the workers in their education and their activities."[46]

Herman (1982) asserts that mere monetary control, combined with close supervision by the agents of capital, were insufficient to maximize the amount of surplus value accruing to the capitalists. Workers, only formally subordinated, still controlled the pace and methods of production, as well as the quality of goods produced. Moreover they were responsible for apprenticeship training and largely controlled the long run development of skills. This formal control precluded capitalists from introducing methods which would reduce the individual value of the product below the social average: "It is abundantly clear that worker control over the process of production hindered the development of capitalism by limiting the extraction of surplus value."[47]

The Real Subordination of Labor to Capital

Heretofore, the bulk of theoretical labor process studies have been developed, either implicitly or explicitly, upon the basis of the real subordination of labor to capital. According to the Brighton Labor Process Group (1976) [reviewed in Elger (1979)], the importance of the real subordination of labor to capital line of reasoning is that it links the broader studies of capital accumulation to changes in the technical and social organization of work. As such, the Brighton paper views changes in the labor process within the dynamics of capital accumulation. This logic of accumulation entails the wholesale transformation of the point of production in search of broader goals, an aspect which the Brighton group sees as underdeveloped in the analysis of Braverman.[48]

As a link between the processes of valorization and actual production, the theory of the real subordination of labor to capital operates on two distinct, but interrelated, levels: those of abstract value theory and concrete structures of technical and social organization of work.

Real Subordination and Value Theory

The wholesale transformation of the labor process serves as the pre-condition for bringing about specifically capitalist production. This mode of production, in turn, entails the commodification of labor power, the extraction of relative surplus value, and the emergence of a social

system of production and accumulation beyond the individual will of the single capitalist.

When labor power is exchanged as a commodity it receives only its value: the worker, or proletarian, selling the commodity, labor power, has no alternative than to work for the capitalist. Gartman's (1978) interpretation of Marx holds that this process was accomplished by stripping formerly independent workers from ownership of the means of production. Separated from the ability to earn a livelihood independently, workers must turn to capital for employment. Important vestiges of ownership and control remain in the handicraft stages of production.[49] While the process of separation is begun in the stage of formal subordination it is only fully realized in the real subordination of labor to capital. Agreeing with the aforementioned quote from Braverman, Herman (1982) asserts: "The end result of the transition to the real subordination of labor is the creation of `abstract labor,' labor that is bereft of any creative potential as the subject and author of the labor process."[50]

In specifically capitalist production, characterized by a labor process in which labor is really subordinated to capital, surplus value is primarily extracted on a relative basis. Here the individual value of the commodity is reduced below the socially average value by the increasing of productivity, rather than by extending the working day. Increasing productivity in the wage goods sector results in

a declining value (and price) of workers' means of subsistence. This reduction in the cost of wage goods means a capitalist can reduce the value of variable capital advanced (v) and still pay labor power at its value. A decline in the value of variable capital, ceteris paribus, in turn increases the rate of surplus value. Both Palloix (1976) and Gartman (1978) cite Marx's dictum that while intensification of the work process is a condition of the extraction of absolute surplus value, intensification continues to an even greater degree under the real subordination of labor to capital. This exacerbates the process of increasing the rate of surplus value by raising s (the mass of surplus value) as well as decreasing the value of labor power.

Herman's analysis of Marxist labor process writers holds that the need to extract surplus value relatively and proletarianize labor is implicit in the nature of the wage contract itself. The capitalist purchases the ability to work, not a definite quantity of labor, and must organize the process of production to maximize the extraction of unpaid labor. Although this process commences under the extraction of absolute surplus value, the subjective control of the labor process by workers themselves, combined with a narrow technological basis, limits this maximization of surplus value. It is only with the establishment of the concrete structures of the real subordination and the appropriation of relative surplus value that these limits are transcended.

Marx was emphatic that the nature of capital, self-expanding value (or the valorization of value), became fully manifest only with specifically capitalist production. Once achieved, production for the sake of production drives the inner logic of the system:

> Production for production's sake production as an end in itself-does indeed come on the scene with the formal subsumption of labour under capital.... But this inherent tendency of capitalist production does not become indispensible, and that also means technologically indispensible - until the specific mode of capitalist production and hence the real subsumption of labour under capital has become a reality.[52] [emphasis in original].

Production for profit is both mediated and motivated by the competition of capitals. This competition entails the cheapening of commodities - that is, reducing their value (and market price) by sinking the individual value of a commodity below its social average. What was accomplished by organizational means under the formal subordination of labor to capital is accomplished by the applications of science and technology in specifically capitalist production. Increased productivity reduces the ratio of living to congealed labor and increases the rate of surplus value. As a result unit costs fall (given the reduction in value) and this becomes the basis of capitalist competition. Those capitalists that do not constantly revolutionize production find themselves producing at below average

conditions of production and, thereby receive a smaller share of the total surplus value produced. Yet, this dynamic embodies fundamental contradictions that Marx elevated to the level of "Laws of Motion" of capitalist society. In the first place, increased mechanization implies a rising organic composition of capital (c/v) which, in turn, creates a tendency for the rate of profit ($\frac{S}{C+V}$) to fall. Although C+V mediated by counteracting tendencies, a falling profit rate touches off a crisis of overproduction and breaks in the process of the self-expansion of value. I have treated this dynamic in detail elsewhere,[53] [Klitgaard and Ellis (1986)] and further discussion is beyond the scope of this dissertation.

Secondly, the process of accumulation, in the Marxist sense, is an uneven one. Powerful disequilibrating tendencies exist simultaneously with the equilibrating tendencies that equalize the profit rate. Those firms producing at above average conditions of production, and receiving a proportionately greater share of surplus value can better withstand recurrent crises of profitability. As a result, competitive firms concentrate and centralize. While a lengthy discussion of the subtleties of "monopoly capitalism" upon value theory are also beyond the scope of this dissertation, the immediate impact of concentrated industries upon work relations will be dealt with at length in a later section.

Corresponding to these abstract theoretical categories lie the concrete structures of the real subordination of labor to capital. The commodification of labor power entails workers who have no alternatives than selling their labor services to a capitalist employer. According to Gartman (1978), the initial phases were accomplished in the transition from feudalism to capitalism when the implements of production were expropriated from the direct producers and concentrated in the hands of capitalists. Marx had called this process one of primative accumulation: "The so called primative accumulation, therefore, is nothing else than the historical process of divorcing the producer from the means of production. It appears as primative, because it forms the pre-historic stage of capital and the mode of production corresponding with it."[54]

The transformation of independent producers into wage workers continues and further develops during the period of the formal subordination of labor to capital. While the labor process as a whole remains largely unchanged and relies on traditional technologies, the growth of early factory production implies a change in the organization of work. For Marx, the concrete basis of manufacturing (or early factory production) was the application of a detail division of labor. This breaking of a whole labor process into a series of specific steps creates a further loss of independence for the detail worker.

A rise of profitability, based on the increased productivity of the collective worker, comes at the expense of the individual detail worker's loss of knowledge needed to produce independently.

The process of commodification is completed, according to Marxian analysis, with the arrival of fully capitalist production. While manufacture and the formal subordination of labor to capital were based on a hierarchical division of labor, specifically capitalist production and the real subordination of labor to capital are based upon the machine. Mechanized production takes the conditions of hierarchy and division of labor as a starting point and further transforms the nature of capitalist production:

> But on this foundation there now arises a technologically and otherwise specific mode of production - which transforms the nature of the labor process and its actual conditions. Only when that happens do we witness the real subsumption of labour under capital.[55] [emphasis in original].

This transformation allows the worker to be turned into an appendage of the machine, to be treated as yet another form of capital. The worker now is subject to the dictates and paces of the automoton, and subject to the control of the owners of machinery. Without such machinery, which is beyond their individual capacities to purchase, the workers become unemployable. With mechanization, and the increase in both scale of production and minimum capital requirements that it entails, the process of commodification of labor

power is completed by the real subordination of labor to capital.

It is the mechanization of production that allows the extraction of relative surplus value, as well as the final commodification of labor power. Elger (1979) holds that the significance of mechanized industry lies in the interrelationship between the strategy of relative surplus value and the development of the real subordination of labor to capital. In the first place, mechanized industry "represents the most substantial advance in the extraction of relative surplus value," as it allows both greater productivity and intensification. Secondly, the completion of the real subordination finds capitalist control objectified in machinery, "as technical calculation and organization by capital displaces craft expertise."[56] This loss of technical and social control has the concrete result of deskilling the previously independent (either genuinely or formally) worker. In the words of Andrew Herman (1982): "The transition from formal to real subordination is measured by the `progress' of deskilling, routinization, and the standardization of tasks."[57] This crucial focus of capitalist forms of control, technological and scientific change and the resulting deskilling of the workforce formed the primary analytical core of Braverman's **Labor and Monopoly Capital.** Debates over the specifics of control and deskilling will be dealt with in considerable detail in the next section.

For now, the strength of the subordination of capital approach lies in the linking of the needs for capitalists to control the point of production in order to transcend limitations on the extraction of surplus value imposed by workers with degrees of independence and the development of the imperatives of the accumulation process. To accumulate within the strict regime of competition a capitalist must continually revolutionize the process of production. Those who do not so innovate, soon lose the competitive battle.

Yet this continual revolutionizing of technology and control is manifest in contradictions. In addition to the aforementioned tendency for the rate of profit to fall, the increased exploitation of the collective worker results in an increasing class struggle. Palloix (1976) finds that mechanization results in an increase in the intensity of the labor process which forms the basis for worker resistance. This, combined with the increase in the organic composition of capital inherent in the increase in productivity, creates the two-fold contradiction.[58] Citing Marx, Gartman (1978) develops the analysis that the development of machinery was conditioned by the capitalist's desire both to increase the intensity of labor and overcome the resistance that greater intensification brought forth. "Workers deskilled by machinery are largely powerless to resist this increased exploitation within the shop."[59]

In the first volume of **Capital**, the contradiction of workers' intractability and struggle at the point of production is seemingly solved. With the conclusion of

chapter 14 on "Machinery and Large Scale Industry" analyses of the labor process recedes into the background, and is supplanted by the contradictions of valorization and accumulation for the remainder of the work - especially in volumes II and III.

Yet, the era of the late nineteenth and twentieth centuries has not witnessed such a solution. Increasing mechanization and new modes of control by capitalists and hired managers have created new forms of resistance as well as capitulation. It is to these modern struggles of work relations within the context of capitalist development that the labor process literature of the late twentieth century addresses itself.

A Note on Monopoly Capital

Much of this literature is framed within the theoretical debates concerning the nature of monopoly capital. Marx had identified the tendency towards concentration and centralization of capital as a basic law of motion. However these laws of motion were based on a competitive economy. The degree to which the development of monopoly capitalism affects the conditions of capitalist production has been the subject of an important controversy in the Marxist literature since the time of Lenin. The watershed work of the labor process literature, Braverman's **Labor and Monopoly Capitalism**, lies squarely within this debate. Arguing that a world view composed of small,

atomized firms is not a viable one in the late twentieth century, Braverman states:

> But since it has been generally recognized that, as Lenin put it in one of the pioneer treatments of the subject, "the economic quintessence of imperialism is monopoly capitalism," it is the latter term that has proved most acceptable. The most substantial recent discussion of this new stage from the Marxist point of view is found in **Monopoly Capital** by Paul Baran and Paul M. Sweezy.[60]

Braverman considers the most important factors in the transformation of the labor process and the degradation of work to be an integral part of the stage of monopoly capitalism. In Braverman's analysis, scientific management, in fact the whole "movement" for the organization of production, as well as the scientific-technical revolution, dates from the emergence of the large corporation in the United States.

That the concrete structure of the large corporation allows changes in the labor process and insulation from the instabilities of the labor market is hardly controversial. General analyses of labor market insulation have been developed in detail by the Dual Labor Market school and need not be elaborated further here.[61]

The controversy arises not from questions concerning the concrete structures of the large corporation, but from the theoretical differences concerning the nature of value relations. In the analysis of Baran and Sweezy, the

tendency of the rate of profit to fall, so crucial to Marx's own theory of capitalist crisis, is replaced by the tendency for the economic surplus to rise. This process gives rise to a powerful tendency towards underconsumption or stagnation. This surplus can not be entirely absorbed by capitalist consumption and investment alone. Rather these tendencies towards stagnation are met by increased expenditures by various governmental agencies, with a large share going towards the military, and an increasing devotion of corporate resources towards a sales effort.

Simultaneously the nature of competition changes. Large corporations base their competitive strategies, not on the continual reduction of price, but upon the expansion of market shares. Competition is not eliminated, as a large corporation must reduce unit cost of production in order to maintain its advertising expenditures, sales efforts, and market shares. However, Baran and Sweezy hold that competition is altered from the type analyzed by Marx, which necessitates a revision of value relations.[62]

It is this position which has sparked a controversy in the Marxist literature. The result of these new relations of value and competition is that the large corporation earns a differentially larger profit rate than the approximate third of the economy still classified as "competitive."[63] Two crucial questions arise: Does a separate mode of production known as monopoly captialism exist? If so, is it characterized by stagnation in the form of a rising surplus, and not by a tendency of the rate of profit to fall?

Secondly, is the competitive advantage secured by the large corporation, as well as the non-price nature of competition, unique to monopoly capital?

A school of Marxian political economists (dubbed the fundamentalists) assert that monopoly capitalism does not exist as a separate mode of production, and that the tendency of the rate of profit to fall is the basis of capitalist crises and fluctuations in the rate and magnitude of capital accumulation. Anwar Shaikh (1978) has gone as far as to state that the position of Baran and Sweezy - that capitalism in its monopoly stage has an inherent tendency to stagnate due to an inability to absorb a rising surplus - stands in opposition to Marx's very definition of capital as self-expanding value.[64]

Willi Semmler (1982) defends the traditional Marxist position that prices of production and not monopolization of markets, regulates prices. In the process of defending the traditional conception of the law of value, Semmler accuses those within the "monopoly capital" school of utilizing a neoclassical notion of competition, and not adequately analyzing the powerful disequilibrating tendencies manifest by capitalist competition. These tendencies are as present today as in Marx's time and affect the prices of production (and therefore market prices and profits) as well as the nature of capital accumulation. Semmler summarizes the debate when he states:

> Thus, we can see different streams in the post-Marxian discussion of the monopolistic stage of capitalism. One stream emphasized the abolition of competition. Power, especially regarding prices and profits becomes the dominant force in the economy bringing about a persistent hierarchy of profit rates. The other stream holds to the Marxist notion that regardless of the genesis of oligopolies and oligopoly groups, capitalism is regulated by the self-expansion and competition of capital. Monopoly profit is relegated to special cases and, in the long run, is threatened by competition from other capitals.[65]

Other contemporary writers within the monopoly capital school defend the notion that the value relations engendered by a monopolistic economy differ from those which characterize an economy of smaller scale capitals. Advocates of this approach have written that it is necessary to incorporate the "reality of our time" into one's analysis, in order to counter bourgeois claims that the elimation of monopoly through proper anti-trust policy will restore the harmonious vision of the neocalssical world. In the words of Howard Sherman, writing in defense of the "monopoly capital" approach:

> This group of "monopoly capital" theorists (who differ among themselves on many issues) do indeed argue that the United States economy is dominated by corporate giants and that such an economy has many features and laws of motion (or functional relations, if you prefer) that differ profoundly from those of England in Marx's day. They do mostly find that the giant corporations have sufficient power to have higher profit rates than the average, but they consider that this is only <u>one</u> feature

> of monopoly capitalism....Moreover, they do not think that these new features of monopoly capitalism in any way make invalid Marx's analysis of some of the basic, continuing features of capitalism, such as exploitation of workers or the causes of capitalist crises (though both exploitation and crises are intensified by monopoly capitalism).[66] [emphasis in orginal]

An understanding of the literature of the labor process necessitates the raising of the issue of the nature of monopoly capital. The very title of Braverman's pioneering work, **Labor and Monopoly Capital**, makes it virtually impossible to ignore the argument. This is especially true in light of Tony Elger's aforementioned argument that by simply positing the relations of monopoly captialism, Braveman ignores the effects of workers' struggles surrounding the capitalists' attempts to circumvent the tendency of the rate of profit to fall, as well as merely assuming the wherewithal to separate conception from execution.

The debate concerning value relations, competition, and profit rates stemming from the nature of capitalism in its monopoly period is an important, and no doubt lengthy, one. It certainly cannot be resolved in this study which focuses upon the labor process in residential construction. Yet neither can it be ignored. Whether or not the concrete structures of technology and work relations are indicative of the presence of monopoly capitalism, or just the continuance of large scale industry, is of secondary importance here. The point of production structures built

by large corporations to separate conception from execution and "manage" workers in the interests of capital (and extract relative surplus value) can exist if one takes an underconsumption or falling rate of profit approach to capitalist crises. Certainly subtle, yet important, differences exist. However, further development of this topic must wait for further research.

Much has been written in the last decade about the effects of struggles for control of production and its effects upon workers, capitalists, and managers. The literature of the labor process is drawn from a wide range of separate disciplines; from radical critiques of industrial sociology, political economy, and labor history. This essay will now review such writings which concern the attempts to transform a willful, independent working class into the dependent and docile agents of capital accumulation, as well as the resistance engendered by attempts at such a transformation.

The Habituation of Workers to Capitalist Production

Historically, for Marx, capitalist production is seen as a social, not a natural phenomenon. Braverman (1974) points out that while humans may separate the production of products into distinct crafts in primative societies or natural economies, there is scant evidence to conclude that a detail division of labor is implemented. Moreover, a craftworker may well divide production into separate parts

during repetitive production, but there is no "natural" tendency to assign these separated component tasks to different individuals.[67] In fact, Braverman devotes an entire chapter to establishing the premise that the detail division of labor arises only with the capitalist mode of production and serves as its basis. Such a process would not be implemented in a natural economy for it degrades and destroys the actual and potential abilities of the human being to pre-conceive work. As an alien force, detail work is imposed from the outside. Braverman summarizes his argument when he asserts:

> The worker may break the process down, but he never voluntarily converts himself into a lifelong detail worker. This is the contribution of the capitalist, who sees no reason why, if so much is to be gained from the first step-analysis - and something more gained from the second - breakdown among workers - he should not take the second step as well as the first. That the first step breaks up the process, while the second dismembers the worker as well, means nothing to the capitalist, all the less since, in destroying the craft as a process under the control of the worker, he reconsitutues it as a process under his own control. He can now count his gains in a double sense, not only in productivity but in management control, since that which mortally injures the worker is in this case advantageous to him.[68]

Braverman also considered this transformation of a willful human being into a "factor of production" to be an unending process. Considering resistance on the part of

workers to be a threat to capital, Braverman asserts that the adjustment of the worker to the dictates of the capitalist mode of production has become a permanent feature of capitalist society.

This adaptation or habituation of the workers to capitalist organization of production takes on two distinct dimensions. The first is historical, in that pre-industrial cultures were fundamentally transformed by the emergence, and eventual dominance, of industrial capitalism. The second aspect of habituation is the incessant and unending process that Braverman addresses - the day-to-day attempt to mold workers already steeped in industrial culture to the needs to capital accumulation. A substantial amount of research concerning the first aspect, the transformation of pre-industrial cultures, has been accomplished by labor and business historians.

Sydney Pollard (1965), in his chronicle of the British experience of industrial management, states that managers in the early stages of industrialization had problems recruiting labor, let alone controlling workers. Pre-industrial craftworkers and farmers were more accustomed to working for subsistence than for income maximization. The use of a cash wage to obtain obedience was a difficult accomplishment, in Pollard's estimation. Moreover, the nature of work in early British factories made the establishment of a permanent labor force difficult, at best.

> The very recruitment to the uncongenial work was difficult, and it was made worse by the deliberate or accidental modelling of many works on workhouses and prisons, a fact well known to the working population. Even if they began work, there was no guarantee that the new hands would stay. "Laborers from agriculture or domestic industry do not at first take kindly to the monotony of factory life; and the pioneering employer not infrequently finds his most serious obstacle in the problem of building up a stable supply of efficient and willing labor."[69]

Both Pollard (1965) and Steven Marglin (1974) cite the use of unfree labor to fulfill the needs of the early British factories. According to Marglin, women and children constituted the majority of workers in the early days of factories. He explicitly argues they were there, not because of some psychological preference structure, but because their husbands and fathers told them to be.[70] Pollard reports that even children found factory employment "irksome" and legal measures were utilized to enforce child labor. A Parlimentary Act of 1782 set pauper children to industrial work and the creation of "schools of industry" was codified into the Poor Law of 1817. This measure also established manufacturing in the Houses of Correction.[71] Marglin (1974) states that pauper children were sold as factory apprentices for long terms with no legal recourse or choice in the matter.[72]

This shortage of labor, or the inability to recruit factory workers, existed despite the transformation of a formerly dependent agricultrual class of serfs and peasants

into a "free labor force." The enclosure movements, beginning in the fifteenth century separated the agricultural peasantry from their former feudal obligations and ties to the land. Lazonick (1974) holds that the preconditions for the industrial revolution were created in this process: one which firmly established capitalist relations of production. Citing estimates from J. L. and B. Hammond, Lazonick asserts that perhaps 500,000 workers were stripped of their land and implements of production by the beginning of the 1700's. The enclosure movement became elevated to the level of national policy during the eighteenth century and persisted into the nineteenth. Policy of individual landholders in the fifteenth century became Parlimentary decree.

> Between 1750 and 1850, more than 4000 Acts were passed, with two particularly heavily-weighted periods: 1764-1780 when there were some 900 Acts and 1793-1815 when there were over 2000 Acts. Since 70% of the Acts were passed in these two relatively short periods, the impact was bound to have been acutely felt.[73]

This acute impact, however, was not enough to fill the emerging factories with workers willing to engage in factory work as an alternative to subsistence farming. Peasants displaced from the farm did not automatically become urban factory workers, despite their newly proletarianized status. Pollard described the dilemma when he states:

> Thus the paradox of the eighteenth century, the lack of employment opportunities, as seen from the point of view of the displaced peasant or the hand worker, existing simultaneously with a labour shortage, as seen by the rising large employer is in part explained by the fact that the worker was averse to taking up the type of employment offered, and the employer was unwilling to tolerate the habits of work which the men seeking work desired.[74]

Recruitment was but a small part of the adaptation or habituation of the pre-industrial population to the rigors and regularities of the new capitalist methods of organization. It also entailed disciplining the newly recruited workforce to the work habits formerly deemed unacceptable. Pollard holds that the reliance upon the tradition of craftwork was not always compatible with the requirements of industrial production.

> What was needed was regularity and steady intensity in place of irregular spurts of work; accuracy and standardization in place of individual design; and care of equipment in place of pride in one's tools.[75]

Entirely new sets of work rules faced the new factory proletariat. The attention of punctuality, regular hours of work, cleanliness and sobriety characterized the attention of early British industrialists such as Wedgewood and Arkwright. Marglin (1974) goes as far to assert that the reason behind Arkwright's significantly greater success over his closest competitor was not technological but organizational. Although Arkwright's spinning machinery was

essentialy similar to Wyatt's, Arkwright prospered and Wyatt failed. Marglin attributes this to Wyatt's gentle passive character which was unsuited to the demands of the organization of capitalist production. Marglin quotes Andrew Ure's assessment that: "To devise and administer a successful code of factory discipline, suited to the necessities of factory diligence, was the Herculean enterprise, the noble achievement of Arkwright."[76] Pollard corroborates the organizational achievement of Arkwright and adds that early British industrialists in general utilized harsh discipline, including beating, dismissal, and fines. While the carrot, or incentive, was utilized, along with the stick, its role was a minor one. Pollard (1965) offers the following table summarizing disciplinary methods for child laborers in 1833: [77]

NUMBER OF FIRMS USING DIFFERENT MEANS TO ENFORCE OBEDIENCE AMONG FACTORY CHILDREN, 1833

Negative		Positive	
Dismissal	353	Kindness	2
Threat of dismissal	48	Promotion or higher wages	9
Fines, deductions	101	Reward or premium	23
Corporal punishment	55		
Complaint to parents	13		
Confined to mill	2		
Degrading dress, badge	3		
TOTALS	575		34

Pollard holds that adult workers were more difficult to manage, that their pre-industrial habits were more entrenched, and the most utilized modes of adult discipline

were recourse to the piece rate and systems of subcontracting. While the piece rate was important in establishing individual wages as an agent of discipline (the cash nexus), subcontracting was more a method of evading factory discipline than creating it.[78]

Free adult male workers, besides being harder to discipline than unfree women and children, were also more likely to leave factory employment. Before the middle of the nineteenth century, agricultural labor presented them with a viable alternative to industrial toil. Traditional historians of the British industrial revolution, such as David Landes, T.S. Ashton and J.D. Chambers, have presented data indicating that rural employment indeed rose from 1750 to 1830.[79] While stripped of their land tenure, not all former peasants streamed to the factories. While agricultural labor was casual, difficult, and uncertain, the traditional pace and outdoor work could be seen as superior to employment in the "dark, satanic mills." Perhaps the capitalists' feeling of the day can best be summed up by Andrew Ure's revealing quote:

> It is found nearly impossible to convert persons past the age of puberty, whether drawn from rural or from handicraft occupations, into useful factory hands. After struggling for a while to conquer their listless or restive habits, they either renounce the employment spontaneously, or are dismissed by the overlookers for inattention.[80]

Pollard also states that days lost to traditional holidays and feasts, which were common in domestic industry and agriculture, were a significant impediment to the regularity of employment desired by factory owners. To overcome these ingrained cultural patterns, tactics besides the carrot or stick were employed. Pollard calls this the assault on working-class morals, and the indoctrination of workers with bourgeois values. Church and state were enlisted to aid industry in inculcating workers with values of obedience, renunciation of drink, singing, and vulgarity, and a sense of "respectability."

> This pre-occupation might seem to today's observer to be both impertinent and irrelevant to the workers' performance, but in fact it was critical.... For unless the workman wished to become "respectable" in the current sense, none of the other incentives would bite.[81] [Emphasis in original.]

Herbert Gutman (1977) asserts the same attempts at the destruction of pre-industrial working-class culture were part of the American experience of industrialization. Post-1815 conflicts resulted from the changing composition of the working class. As former artisans, farmers, and casual day laborers were drawn into the industrial ranks, they brought with them habits and cultures not valued by the emerging necessities of industrialization. According to Gutman, irregular and undisciplined work habits were a constant source of frustration to cost-conscious mill owners in the period before 1843.[82] Drinking, gambling and amusement were

listed as reasons for dismissal by emerging capitalists of the pre-industrial period, with one Connecticut mill owner defending the seventy-two hour week on the grounds that it kept his workers, including children, from vicious amusements. The campaign for morality all the more intensified when lower class women were employed. Gutman cites a Lowell clergyman as summarizing the conection between industry and morality:

> The sagacity of self-interest as well as more disinterested considerations...has led to the adoption of a stict system of moral police. Without sober, orderly and moral workers, profits would be "absorbed by cases of irregularity, carelessness, and neglect."[83]

Pre-industrial artisans continued to cling to their traditional work habits until the late nineteenth century. Gutman described the conflicts between the traditional Greek, Slavic, and Jewish immigrants over the keeping of feast days and religious festivals. Even when these traditional celebrations were brought within the domain of the regular work week, Gutman claims the result was high absenteeism and labor turnover, combined with general demoralization of the affected populations.

The most significant conflicts came over the question of regularity of work. E. P. Thompson describes work controlled by artisans as varying between intense bouts of work and idleness. New York coopers (barrel makers) as late

as 1877 would use Saturday as a day of lounging and drinking rather than steady work. Employers felt the day lost to the "goose-egg" (or one-half barrel of beer). Gutman describes the celebrating as continuing throughout the weekend, with little work being accomplished on the following "Blue Monday," save the sharpening of tools and hauling-in of stock. While work may have been performed intensely during the remainder of the week, the practice angered owners now more pressed by regular shipments of goods.

> To the owners of competitive firms struggling to improve efficiency and cut labor costs, the Goose Egg and Blue Monday proved the laziness and obstinacy of craftsmen as well as the tyranny of craft unions that upheld venerable traditions. To the skilled cooper, the long weekend symbolized a way of work and life filled with almost ritualistic meanings. Between 1843 and 1893, compromise between such conflicting interests was hardly possible.[84]

This conflict was not limited to skilled, native aritsans. Rural women and immigrants fought the same struggles. The passage of time, inculcation of "American" values and mechanization played a role in the creation of an American industrial culture. However, the assimilation of first generation industrial workers does not, by necessity, imply that the following generations will automatically be rendered into passive "factors of production."

The work of David Montgomery (1979) shows that struggles to habituate workers to the dictates of industrial production did not cease with the dominance of American

industrial production in the late nineteenth and early twentieth centuries. The work of "management theorists," such as Frederick Winslow Taylor, was concerned not with the transformation of first generation proletarians, but with workers already aculturated to the dictates of industrial society. Although these workers had internalized the new sense of time and discipline, and viewed the detail division of labor and mechanization as a common and "natural" feature of their environment, resistance to capitalist organization of work continued as a chronic battle.

> However, they had fashioned from these attributes neither the docile obedience of automatons, nor the individualism of the "upwardly mobile," but rather a form of control of productive processes which became increasingly collective, deliberate and agressive, until American employers launched a partially successful counterattack under the banners of scientific management and the open-shop drive.[85]

According to Montgomery, working class resistance to the regime of work imposed by capital in the late nineteenth century took three primary forms. As industrialization changed the structure of American capitalism, the basis of working class resistance passed from the functional autonomy of the craftsman to the development of union work rules and the use of sympathetic strikes to enforce them.[86]

For Montgomery, the basis of craftsmans' control was two-fold. Control was partially vested in their superior knowledge of the techniques of production. These time-

honored techniques were passed from generation to generation through control of apprenticeship. Control of entry into the craft paralleled the other dimension of craftworkers' control - supervision of helpers. According to the analysis of Montgomery, this supervision included decisions over hiring, task assignment, and pay, as well as training in the subtleties of craft skill.[87]

This type of craft control is independently corroborated for carpentry by Bob Reckman (1979), in his distinction between craft and trade.

> I find it helpful to think of the carpenter's activities as involving two dimensions: (1) craft - the actual skills, tools, technologies, and logic of the work, and (2) trade - control over the processes and products toward which the craft is applied. The two dimensions are not perfectly separate, of course: technical knowledge or skill can give a person real power and control in the work setting. It may or may not, however, give independence or positive, directive control, which are key elements of autonomy as a "tradesman."[88]

To understand the dimensions of this independence of trade or functional autonomy of the craftsman one must transcend a mere technical analysis of production and explore the prevailing moral codes of autonomous craftsmen.

Montgomery delineates three crucial aspects of the craftwrokers' moral code which protected their functional autonomy. The first aspect was the stint, or an output level collectively agreed upon by the skilled craftworkers

themselves. Taylor had bemoaned this "systematic soldiering" in his attempts to increase the output of the machine shops while at Midvale Steel Works. Yet, he claimed to "understand" its necessity, due to the common management practice of reducing the prevailing piece rate as output standards rose.

Despite such an understanding, Taylor and other representatives of management's thrust for efficiency continually pressured workers to increase output. Montgomery cites the observation of Taylor's disciple, Henry Gantt, that new workers were quickly acculturated to the craftsman's moral code of limiting output below the physical maximum, or following the stint. Negative sanctions awaited those workers who exceeded output norms collectively arrived at by the craftsmen themselves.

> On the other hand, those who held fast to the carefully measured stint, despite the curses of their employers and the lure of higher earnings, depicted themselves as sober and trustworthy masters of their trades. Unlimited output led to slashed piece rates, irregular employment, drink and debauchery, they argued. Rationally resticted output, however, reflected "unselfish brotherhood," personal dignity, and "cultivation of the mind."[89]

Reference to this moral code of workers helps explain Taylor's own difficulties in getting the new machinists he trained to adopt his philosophy of a "fair day's work," rather than siding with the established workers and restricting output, despite the promise of increased income

through incentive pay. Like the pre-industrial coopers studied by Gutman, late nineteenth and early twentieth century machinists were attempting to use the informal relations of the workplace to protect a collective lifestyle against the individualist-oriented incursions of a management bent on increasing output.

The second dimension of the workplace code of ethics, according to Montgomery, was that of "manliness." A manly bearing towards the boss, refusing to cower under threats or acquiese to breaking the stint, connoted dignity and respect, as well as male supremacy, in the nineteenth century. A "man" would quit or strike before accepting the indignities of such management control.

This "manly bearing" was expected to be exerted with regards to one's fellow workers, and was manifest in the final aspect of the workers' ethical code. Solidarity with one's brothers in toil precluded the hoggishness of undermining another's job by complicity with the boss or exceeding the workers' own output quotas.

> In short, a simple technological explanation for the control exercised by nineteenth century craftsmen will not suffice. Technical knowledge acquired on the job was embedded in a mutualistic ethical code, also acquired on the job, and together these attributes provided skilled workers with considerable autonomy at their work and powers of resistance to the wishes of their employers.[90]

Critics of Braverman contend that the focus of his analysis is overly directed towards the loss of craft autonomy, and as a result he neglects other forms of collective resistance on the part of twentieth century workers. Richard C. Edwards (1978) holds that Braverman does not account for worker responses to forms of work degradation evolving since the demise of the dominance of the autonomous craftworker.

> In Braverman's story, new, fragmented, deskilled methods of work are developed and implemented by capitalists, with drastic effects on workers but with little apparent resistance. No impact results from what resistance does occur. Unions play no role, and there is no class struggle.[91]

Albert Szymanski (1978) sees potentially adverse political implications resulting from Braverman's focus upon the decline of traditional craft skills and the craftworkers' autonomy. Stressing the decline of the craftsman's role leads to the view that the aim of socialism is the restoration of skills to the individual craftworker rather than providing collective control to the working class. Szymanski does not view this as a tenable strategy for a workers' movement as, in his estimation, truly skilled craftworkers have never exceeded fifteen percent of the working class throughout the histories of capitalism or feudalism. For Szymanski, the appeal of Braverman is towards the "aristocracy of labor," not the rank and file of the working class. Other forms of degradation exist on the

job such as racism, low pay and unsafe working conditions.[92] By not transcending the loss of control of the autonomous craftworker, Braverman is unable to analyze these potentially more potent tools of working class organization and resistance.

Tony Elger (1979) also finds fault with Braverman's analysis on his conceptualization of the forms of worker resistance in the twentieth century. This problem stems directly from Braverman's failure to acknowledge workers' struggles beyond the protection of craft autonomy. Although Braverman devotes an entire chapter to the continuing process of habituating the worker to the dictates of industrial production in the monopoly capitalist era, an analysis of organized resistance to such continuing habituation is missing from the pages of **Labor and Monopoly Capitalism.**

> Even when he recognises that capital faces a recurrent task of reestablishing its control over the labour process he conceptualizes worker opposition in the inadequate terms of a polarity: either renascent craft expertise or generalized subterranean hostility.[93]

Labor process scholars in the wake of **Labor and Monopoly Capitalism,** have filled some of these lacunae with analyses of both organized worker resistance and evolving patterns of management control. While a complete analysis of trade union movements is the subject matter for another study, some of the connections between organized union

demands and the nature of work relations deserve brief mention.

According to David Montgomery attempts to enforce the collective ethic of the workplace culture were not eclipsed by the decline of craftsman autonomy. Rather they were codified into union work rules, in a shift from spontaneous to collective rules unilaterally imposed by unions in the post-Civil War decades of the nineteenth century. The number of these rules grew steadily with the rise of the union movement after 1886 and carried a distinctively collective, rather than individualistic, tone.

> It was, however, in union legislation against subcontracting that both the practical and ideological aspects of the conflict between group solidarity and upwardly mobile individualism became most evident, for these rules sought to regulate in the first instance not the employers' behavior, but that of the workers themselves.[94]

Montgomery claims that the building trades unions were at the forefront of this opposition. The United Brotherhood of Carpenters and Joiners of America (UBC) banned their members from engaging in piecework altogether. Christie (1956) found that the advent of piecework was accompanied by the arrival of the specializing subcontractor. These "subs" or "lumpers" would contract for a small portion of the job and employ inexperienced "green hands," thereby throwing experienced union members into the ranks of the unemployed.[95] This demand for the specialist carpenter was exacerbated by the coming of the industrial revolution.

Technological changes in the steel industry, combined with the invention of the elevator, allowed for the construction of steel-framed skyscrapers in the final decade of the nineteenth century. Besides removing the erection of the structure itself from the carpenters' domain, the standardized room configurations made it easier to hire specialists working for subcontractors.[96] By controlling work rules, the Carpenters' Union hoped not only to insure work for its members, but also limit the application of the division of labor.

This analysis is corroborated by Robert Max Jackson in the **Formation of Craft Labor Markets** (1984). By imposing a standardized set of work rules upon all builders, the low-cost subcontractors could be driven from the market. The resulting decline in competitive pressure would limit the extension of the division of labor and insure a more traditional labor process. Jackson reports that the larger and more "respectable" builders were in agreement with the UBC, as they felt that piecework was a form of unfair competition that threatened their profits. Organizing the large urban builders protected union jobs, but, in addition, union imposed work rules resulted in a collective form of resistance to the degradation of work as well.[97]

Montgomery (1979) also indicates that a third level of control struggles developed when unions mutually supported each other's work rules through strike activity. Three implications arose from such strike activity in the

period 1881-1905. Strikes called by unions rose by a greater degree than those developing spontaneously. Secondly, union-called strikes dealt proportionately less with wages than those of the pre-1881 era. And finally, the unionization of workers grew faster than strike activity. The collective character of resistance reappears, now in the form of the broader goal of union recognition and organization, rather than the more individualized goal of wage increases. Montgomery cites the use of the sympathy strike as the prime example of unions enforcing their mutualistic code of solidarity upon employers. Once again, construction unions played a leading role, being identified by Montgomery as the "leading center of sympathy strikes."[98]

Richard C. Edwards (1979) also holds that worker resistance and struggles over control intensified after the era of production controlled by the autonomous craftsman passed from its position of dominance. The coming of the large machine factory, with its technical control of production, resolved the problem of the recalcitrant autonomous craftworker's limitation of output. However, the cost was one of transferring an individual workplace struggle between craftsman and foreman to a plantwide level. When a small group at any stage of the integrated assembly line ceased work the entire line stopped. In Edwards's words, "every worker necessarily joined the strike."[99] This action on the part of unions existed well into the twentieth century and was best exemplified by the 1936-1937 sit down strikes in the auto industry.

Moreover, late twentieth century control mechanisms, such as the development of the internal labor market, negotiated work rules, and greater degrees of job security raise the struggles for control from the workplace to the societal level. While these schemes were designed to link the individual worker to the firm instead of other workers, they too came at a price. Edwards cites not only individual sources of worker anomie such as absenteeism, declining productivity, and increasing job discontent, but also a heightened call for workplace democracy. In this context, workers' control becomes an important building block in the transition to a decentralized socialist society.[100]

In summary the establishment of the property relations of capitalism did not automatically create work relations that were compatible with capitalists' desires. The historical transformation of independent and skilled producers into passive and unskilled "factors of production" was based upon both technical and social dimensions. Technically, capitalists' control of the production process necessitated the development of machinery, which was privately owned as capital.

Socially, workers continued to resist against the social organization of the capitalist workplace. From the employment of paupers and prisoners, to the breaking of working class culture, capitalist control has necessitated the habituation of workers to the dictates of production for profit. While this has been a historically difficult

process, as well as an on-going one, the need for capitalists to control the workplace stems from the very nature of self-expanding value. An understanding of the historical roots of capitalist control greatly enhances the comprehension of present struggles for control of the point of production.

This review now turns to the broad literature dealing with capitalists' attempts at controlling the labor process and work relations. The first section will review the literature establishing the theoretical need for, and origins of, labor process control. Next, differing forms of control will be described and analyzed, with special attention being paid to critiques of scientific management. Finally, the effects of technological and organizational change, inherent in the thrust for management control, upon the skill levels of affected workers will be scrutinized.

The Theoretical Need for Control

Much of the theoretical necessity of establishing capitalist control has been treated earlier in this chapter, in the sections on "Labor and Labor Power" through "Absolute and Relative Surplus Value." These sections focussed mainly on the original works of Marx, Braverman, and Marixist value theorists of the twentieth century. However, it is useful to reiterate briefly the analyses of contemporary labor process writers.

Andrew Herman (1982) states that Braverman and other proletarianization theorists argue that the need for capitalist control stems from the nature of the wage contract itself.

> The capitalist does not purchase an agreed amount of labor but the power to labor over an agreed amount of time. Therefore, there is a distinction between labor power that is purchased and its realization in the process of production.[101]

In other words, capitalists can purchase only the ability to work for a specified time. It is through their own specification of what that time period will be, along with the determination of how work is organized, and which technologies are used, that enables capitalists to transform the ability to work into surplus-creating work. While labor power may be purchased, surplus labor must be extracted. Dan Clawson (1980) continues this line of reasoning by stating that when a capitalist purchases a worker's labor power, he/she also owns the product that has been produced. The capitalist's goal of maximum output is not necessarily shared by the workers: they are no longer working for themselves and do not benefit from the increases in production. Consequently, according to Clawson, workers wish to do no more than what is necessary. Hence, establishing what is necessary entails an element of control on the part of capitalists.

> To ensure that capitalist goals are met, supervision of a special kind is necessary. Workers must be kept to their work, and the entire enterprise must be oriented toward the capitalist's goal of producing the greatest possible amount of surplus value.[102]

As mentioned above, seeking to increase the amount of surplus value extracted from the workforce is not simply a matter of individual greed on the part of capitalists; it is an imperative of being a capitalist. Pressured by competition to reduce unit cost and sink the value of their individual commodities below the socially average value in order to accumulate, the need to increase labor productivity and/or the intensity of the work process is beyond the individual will of the capitalist. It is a condition of remaining a capitalist. Workers' efforts to retain traditional work processes, to determine their own pace, and utilize traditional technologies function as a limit to this capitalist imperative. Therefore, the nature of capitalist competition implies relations of domination, or control. Michel Aglietta summarizes this relationship between the wage bargain, the labor process, and the process of capital accumulation. After positing the purchase of labor power (the wage relation) as the fundamental relation of capitalist production, Aglietta contends that the totality of production relations contain a dual nature of cooperation and antagonism.

> In showing how the labour process is transformed under the impulse of the struggle for surplus-value, we must

> acquit a task that is essential for the transition from the abstract to the concrete in any theory of accumulation: namely to demonstrate that the transformation of the labour process creates relationships within production that adapt the cooperation of labour power to the domination of the wage relation. Production thereby constitutes a structure in motion, in other words, an organic set of social relations whose evolution is the condition for perpetuating the wage relation.[103]

However, the evolution of these social relations transcends the immediate point of production. Rather, they pertain to the mode of production as a whole. For Michael Burawoy, the mode of production consists of particular ways of appropriating surplus labor from the direct producers, or relations of production. In addition to this, the mode of production includes relational aspects of the labor process itself, that is, relations men and women enter into when they transform nature. Burawoy calls these aspects of the labor process relations <u>in</u> production. For a mode of production to be reproduced there must be a set of mechanisms that reproduces the relations of production, in addition to the production of value. This implies a distinct role for the perpetuation of the dominant ideology.[104] This ideological dimension impacts the relations in production, or labor process relations, as well. According to Burawoy, capitalists must both secure and obscure the relations of surplus value. Not only must capitalists secure unpaid labor, but they must also convince workers that this unpaid labor is not the source of their

profits. While securing surplus value can be accomplished by force or domination, this process can also contradict the need for obscuring the source of profit. Burawoy states that Marx, as well as Braverman, inadequately conceptualized this dilemma by excluding efforts of capitalists and managers to construct mechanisms to elicit the consent of workers to the prevailing labor process. Instead they dealt solely with the relations of domination. Aglietta's duality of antagonism and cooperation is also addressed by Burawoy as a problem of understanding the nature of the labor process beyond mere domination of workers. The labor process, therefore, must be understood in terms of the specific combinations of force and consent that elicit cooperation in the pursuit of profit."[105]

Richard Edwards argues in a similar vein in **Contested Terrain** (1979). The development of work relations and systems of control that accompanied the growth of the large corporation fractured the personal links of the employee to the firm. In order to insure stability capitalists were forced to respond to worker resistance by evolving subtler forms of control which obscured the explicit relations of hierarchical domination by implementing structural control systems based on negotiated rules.[106] The literature of the labor process deals in depth with these forms of control utilized within twentieth century industrial and craft production. The complexity of debates concerning varying control mechanisms was touched off by Harry Braverman's

analysis of the crucial role of Frederick Taylor's ideas on "Scientific Management." Criticisms concerning the actual scope of the implementation of Taylor's system and the differing forms of its extension formed the basis for writings on alternate strategies of workplace control.

Scientific Management

Braverman's **LMC** spawned the modern debate on the labor process, as well as a critical analysis of Frederick Winslow Taylor`s principles of "Scientific Management." The effects of Taylorism upon the working class forms a fundamental focal point of Braverman's argument. In the words of Tony Elger: "Braverman's analysis of `scientific managment' is the pivotal feature of his whole account of the degradation of work in the twentieth century."[107] In Braverman's assessment, Taylor's approach was not the "one best way to do work" but an answer to the specific problem of controlling alienated labor. Rather than being a "science of work," Taylorism represents a "science of the management of others' work." In perhaps his strongest statement, Braverman declared that Taylor's system is one which starts from the capitalist point to view and seeks to control a recalcitrant work force in an antagonistic setting.

> It investigates not labor in general, but the adaptation of labor to the needs of capital. It enters the workplace not as the representative of science, but as the representative of management masquerading in the trappings of science.[108]

In Braverman's conceptualization, the principles of Taylorism, or "scientific management," simply cannot be overestimated. Citing the work of management consultant Peter Drucker, Braverman places "scientific management" at the forefront of the design of work itself. In doing so he relegates management styles, such as human relations, to the relatively minor role of "maintenance crew for the human machinery." The role of such personnel administrators, along with industrial psychologists and sociologists, is to adapt workers to pre-existing work processes. For Braverman, those work processes are based on the principles of Taylorism.

Dan Clawson (1980) places the development of "Scientific Management" in historical perspective when he argues that turn of the century managerial theory was an attempt to undermine the pre-existing craft system of production.

He states that the early management literature attempted to undermine the relative autonomy of workers as well as speed production. In other words the issue of control, while related to that of coordination, implies an antagonistic social transformation that lies above and beyond that of improved material flows and scheduling.

This dichotomy is insightfully corroborated by David Gartman (1978) when he distinguished between basic control and surplus control. Gartman makes the conceptual distinction between control and coordination that Chandler

neglects in his reinterpretation of Marx's analysis of the labor process. He considers basic control to be a neutral instrument for coordinating any large-scale enterprise, and its application is necessary in any mode of production. This form of coordination helps increase the potential for productivity in the employment of collective labor, and direction of the production of use values is independent from the appropriation of surplus labor.

On the other hand, a second form of control appears with the emergence of capitalist relations of production. Gartman labels this form surplus control. Needs for surplus control are brought about by the antagonistic social relations of capitalist production. Workers' resistance to the increase in the rate of surplus value and capitalists' need to accumulate form the basis of this antagonism. To effectively control the point of production and increase productivity, capitalists engage in both surplus and basic control.

> The increase in surplus value resulting from surplus control, however, is totally different in nature from that resulting from basic control. Basic control increases the rate of surplus value under any social conditions by increasing the productiveness of labor. Through the coordination and regulation of work it reduces the total quantity of labor time required to produce a commodity, regardless of the social relations of production. On the other hand, surplus control increases the rate of surplus value solely because it represses the resistance of an exploited, antagonistic work force. It takes control of the labor process out of the hands of recalcitrant workers,

> and thus allows capitalists to make work more intensive, extensive, and productive than laborers would voluntarily make it.[109]

Clawson (1980) also emphasizes the role of surplus control. Management innovations in the late nineteenth and early twentieth centuries, such as the utilization of piecework, improved record keeping, and changes in technology are seen as interrelated methods of wresting control of production from the workers themselves. According to Clawson it was not the mere brilliance of Taylor's analysis that convinced capitalists of the need for (surplus) control. Rather, twenty years of struggle were responsible for the view that a significant degree of workers' point of production constrained potential increases in productivity and profitability.[110]

In this line of reasoning Taylor was not so much a pioneer of management control, but one whose vision allowed the extension of management control to move to a higher plane. Clawson writes that while earlier forms of management were able to increase speed of production and weaken workers' grip on organization, they were unable to make the "qualitative leap" that Taylor did, because they had no alternative conception of how production could be organized.

Taylor's system provided that vision of an alternative and was put into practice - at least partially - within capitalist production. Besides having the best analysis of the problems facing managers, and personally directing the

policies he proposed, Taylor provided a solution to perceived problems by reorganizing the production process and work relations. In Clawson's view, "Taylor represented the unification of theory and practice in the cause of the capitalist class."[111]

Despite an upper-class upbringing, Taylor had served time working as a machinist, advancing from apprentice to gang-boss within two months and becoming chief engineer of the machine shop within six years. Although Clawson attributes this rapid advancement to Taylor's close friendship with the owners of Midvale Steel, he does acknowledge his abilities as a craftsman. Braverman (1974) concurs with this opinion, stating that although Taylor's engineering training was limited, his experience in actual production resulted in a superior grasp of shop practice.[112] This point of production experience differentiated Taylor from other management theorists, and his knowledge of both the technical and social aspects of metal-working helped inspire his alternative vision. Taylor knew both how to do the work of a machinist and the workplace culture and social relations in which the actual production work occurred. It was Taylor's vision that adequate control of the production process required that management possess and control the knowledge that he and other machinists had. His "prinicples of scientific management" are viewed by Braverman as methods of accomplishing this goal and putting his alternative conception of production into practice.

In **Labor and Monopoly Capital** (1974), Harry Braverman isolates three basic principles of Taylorism. The acceptance and implementation of these basic principles allowed capitalists to control the process of production, and achieve the conditions for the future extraction of surplus value that was unrealizable before Taylor enunciated them.

Braverman calls the first principle the dissociation of the labor process from the skills of the workers. Taylor had realized that the traditional knowledge possessed by craftworkers exceeded that of owners and their managers. Only by gathering, then classifying and systematizing this knowledge, could managers develop quantitative standards based on "science," instead of fuzzy past experience.

The second principle is termed "the separation of conception from execution." Taylor had advocated that all possible brainwork be removed from the discretion of shop floor workers and concentrated under the aegis of management in a planning or layout department. Braverman held this to be the key to scientific management, since the removal of brain work from execution dehumanized the labor process and would not be willingly imposed upon themselves by workers. In addition, workers who controlled their own knowledge of how the job was to be done would also determine how fast it was to be done, thereby depriving management of control over the desired intensity of work.

The third step was the "use of this monopoly over knowledge to control each step of the labor process and its mode of execution." Management could now plan each step of the process and give explicit instructions to workers who were no longer to think but, "do what they were told." With management possessing the knowledge formerly held by workers, the power of resistance based on these craft skills would be significantly diminished. With it then capabilities of extracting surplus value would be enhanced.

The development of these principles would enable capital and their managers to take the qualitative leap towards increased productivity, in the sense of both basic and surplus control, that traditional management, based on workers' control of the details of production, was unable to accomplish. "Its role was to render conscious and systematic, the formerly unconscious tendency of capitalist production."[113] In so systematizing the tendencies of capitalist production these principles, taken as a whole, would give management the upper hand in determining what is "a fair day's work."

Taylorism as Ideology or Practice?

An adequate understanding of the labor process literature requires addressing the debate concerning the degree of actual implementation of Taylor's system in actual practice. Braverman asserts that modern management came into being on Taylor's three principles, arising both as

theoretical construct and systematic practice. Clawson (1980) also holds this view, stating that the dissemination of Taylor's influential writings were less important than the widespread introduction of his system.[114]

Other writers vehemently disagree with this position. According to business historian Alfred Chandler (1977), no factory owner ever adopted Taylor's system without modifying it, even those who had directly worked with him or his disciples.[115] Richard C. Edwards holds that Braverman's analysis of scientific management overestimates its impact. While Taylor's principles presented a powerful ideological agenda and potential set of solutions for the crisis of control within the firm its actual implementation was limited. In the first place, the system was extremely difficult to understand, ran counter to the traditional ideas held by turn of the century managers, and did not produce immediate results.

> More significantly, Taylorism failed to solve the crisis of control because most big corporations failed even to give it a try. The extent and incidence of scientific management has always been something of a mystery, but the available evidence suggests that Taylorism was confined to smaller, usually nonunionized enterprises.[116]

In the opinion of Edwards, Taylorism was not universally adopted by major corporations for two fundamental reasons. In the first place, the methods of Taylorism, which attempted to individualize the relations

between workers and owners, which sought to eliminate collective control and solidarity among workers, ran counter to other labor programs of large corporations. The era of Taylorism was also the era of "welfare capitalism," and the blatant Taylorist strategies of breaking workers' control over production undercut simulutaneous attempts to tie the interests of the worker to those of the firm, via welfare programs. The conflict provoked by Taylorist practices weakened the bonds that the welfare systems were trying to rebuild. The conflict itself provides the second reason for Edwards' rejection of the practicality of Taylorism. Scientific management did not solve the crises of control for turn of the century firms because workers resistance "fought it to a standstill." The strike provoked by the attempted introduction of scientific management at the Watertown, Massachusetts arsenal in 1909 alerted organized labor to oppose Taylorism.[117]

David Montgomery (1978) also gives an account of the resistance provoked by the implementation of elements of scientific management, espeically Taylor's notion of gathering the traditional knowledge of workers by management. Citing P.J. Colon, Vice President of the Internation Association of Machinists, Montgomery states that the militant union strategies of the early 1900's were stimulated by scientific management in basic industry. Moreover, the chaos in working class life spawned by industrial concentration and reorganization created a fertile climate for the rise of socialist and syndicalist

labor leaders. Capitalists as well as the state, in the form of the War Labor Board, were instrumental in mediating the hard edges of Taylorism in order to circumvent the "greater problem" of a union movement dedicated to the abolition of private property.[118]

Bryan Palmer shares a similar vision, arguing that workers defeated Taylorism and prevented its widespread adoption. Like other labor process writers, Palmer places Taylor within the context of a general managerial movement which he entitles "The Thrust for Efficiency." This managerial search for more efficient and profitable production methods was the outcome of the transformation of the American economy itself in the late nineteenth century and part of the process of the intensification of labor. According to Palmer the reproduction of capitalism requires the creation of attitudes and perceptions conforming to the structures of capitalist production. The spreading of the notions of capital as the source of value and workers' incapacity to understand or scientifically direct work were crucial to the development of the ideologies of capitalism. While Taylor's schemes provoked extreme resistance, the basic message was eventually incorporated into the American value system. Palmer holds that Braverman's view is not necessarily incorrect, but incomplete, in that it equates ideology with practice and fails to account for the variations in management control forced upon capital by workers' rebellion.[119]

Summary of Scientific Management

While the majority of the available evidence indicates that widespread adoption of the Taylor system as a whole was not achieved, the impact of scientific management has, nonetheless, been large. The importance of Taylorism lies in the efforts to systematize the organization of the workplace, in order to enhance capitalist control. The explicit analysis of the role of "Sciencitic Management" transcends the narrow "technologically determinist" position that worker control is eradicated simply by the technical nature of machinery that characterized specifically capitalist production. Taylor's principle of the "separation of conception from execution" exploited the possibilities that were only latent in the machinery.

Moreover, the imposition of his system did provoke resistance, and Taylorism has failed to solve the crisis of control that exists in the present era. Although the principles of control enunciated by Taylor and his disciples are not universally accepted, the basis idea of control of decision-making by management is integral to the development of the formal subordination of labor to capital.

Alternate Forms of Capitalist Control

Several theories of capitalist control have developed since the introduction "scientific management." These theories attempt to introduce a greater degree of sophistication into the literature by transcending

Braverman's rather narrow dichotomy of craft control versus scientific management. Here workers either make independent decisions on the course of production by virtue of their craft autonomy, or are totally dominated by a management issuing detailed instructions and allowing no chance to use one's mental capacities. In addition to incorporating workers' actions into the nature of the labor process, these studies also link that process to the development of capital accumulation itself. Two analytically separable conjuctures have been developed by the post-Braverman literature on control. The first ties the specific forms of control to the dominant stage of capitalist development. The second strain of literature contrasts the forms of control found in large scale industry with those found in craft methods of production.

In **Contested Terrain** (1979), Richard C. Edwards identifies three primary means of control which roughly correspond to three different epochs of capitalism. The first such method is entitled "Simple Control." This method dominated the era of nineteenth century American capitalism characterized by the competitive, entrepreneurial firms. This control was informal and unstructured. Moreover, the owner of the firm personally directed the work and alternately disciplined and rewarded the workforce on an arbitrary basis. For this system of control to function properly, the firm had to be small enough for the workers to have some type of personal relationship with the capitalist,

and to be directly motivated and inspired to increase producativity by him or her. Capitalists using simple control began to perceive its inadequacy during the middle and late nineteenth century as firms began to expand, both in terms of output and geographical region.[120] As the entrepreneurial firm grew, it became exceedingly difficult to manage or even know the subtleties of the work process, which were often left to the skilled workers themselves and those who served as foremen and "inside contractors."

As a response to the changing and expanding nature of business operations, capitalists forged a second variant of simple control, which Edwards terms "hierarchical control." The creation of this form was a method to transcend the limitations placed on expanded production by the skilled craftworkers themselves, who often opposed technological and organizational change designed to drive them in pursuit of increased profitability. Modelled on the military, this new hierarchy gave increased authority to foremen and supervisors who could continue to use arbitrary power of hiring, firing, and rewards to extract the maximum surplus labor. Edwards aptly describes this situation by the use of Daniel Nelson's term, "the foremen's empire." The arbitrariness of foremen, as well as the efforts to undercut the control of skilled craftworkers meant that hierarchical control provided only an interim solution for capitalists, to be transcended by the application of mechanization.[121]

The beginnings of "technical control" in the United States can be traced to the New England textile mills in the early decades of the nineteenth centruy. Edwards defines technical control as a system which "involves designing machinery and planning the flow of work to minimize the problem of transforming labor power into labor as well as to maximize the purely physically based possibilities for achieving efficiencies."[122] Technical control embodies both physical and social dimensions and should be seen, according to Edwards, as the result of capitalist designs of technology, not the result of technology in general.

The application of technology through mechanization allowed capitalists to partially break the constraints of both workers' control and the foremen's empire. Rather than determining the pace on the basis of traditional craft skills, workers' are now subjected to the pace of the machinery, set by management removed from the immediate point of production. Simultaneously, the role of foreman is transformed from an initiator of tasks to the role of monitor. Instead of personally directing the flow of work, the foreman's role is to penalize exceptions to the normal flow.

Edwards asserts that these simultaneous changes had the effect of mediating conflict on the shop floor and transferring it to a higher, and more diffused level.

> Struggle between workers and bosses over the transformations of labor power into direct personal confrontation; now the conflict was mediated by the production technology itself. Workers had to oppose the pace of the line, not the (direct) tyranny of their bosses. The line thus established a technically based and technologically repressive mechanism that kept workers at their tasks.[123] [Emphasis in original.]

The promise of technical control was most fully realized by the coming of the assembly line. While a disassembly line had previously existed in meatpacking, this innovation is most commonly attributed to Henry Ford. For Michel Aglietta (1979), Fordism superceded Taylorism. By mechanizing the assembly phase, the time needed to produce what was to become a basic durable consumption good dramatically fell. Not only were profits and technical efficiencies increased for the Ford Motor Company, but work was intensified and the separation of mental and manual labor (or conception and execution) was radicalized. This resulted in two major changes on a broader social scale. FIrst, the socially average labor time for the reproduction of labor power fell, commensurate with the significant drop in the price of the basic wage good of tansportation. Secondly, Fordism institutionalized the economic class struggle in the form of collective bargaining.[124]

Arguing in essentially the same vein, Palloix (1976) states that the use of machine systems (such as the assembly line) eliminated the porosity in the working day and allowed

the maximum turnover of capital necessary for the production of relative surplus value.[125]

Andrew Herman (1982) criticizes both Palloix and Aglietta for utilizing too narrow a conception of Fordism, and confusing it with Taylorism. Herman contends that Fordism was more than an extension and refinement of the principles of scientific management:

> Taylorism merely represented a refinement of tasks that were already defined. Fordism, on the other hand, fulfilled the promise of Taylorism by effecting a complete reorganization of the technical division of labor.[126]

It seems however, that Aglietta's conceptualization of the institutionalization of the class struggle through the advent of collective bargaining makes his analysis transcend the narrowness Herman accuses him of. This new form of ajudicating work relations is integral to the development of another stage of control, in the analysis of Edwards.

"Bureaucratic control" emerges as a management strategy to cope with the conflicts raised by technical control. Like its predecessor, bureaucratic control is a form of structural, rather than personal, control. According to Edwards, technical control was only partially successful in solving the crisis of control because the strategy of industrial unions, which arose in the time period dominated by technical control, transformed the workplace struggle to the plant-wide level.

Given the rise of collective bargainig in large corporations, bureaucratic control serves to institutionalize the rules of hierarchy within the firm. The focus becomes one of obeying the rules established by the company. Workers who oblige such rules become eligible for promotion, better jobs, with higher pay and a greater degree of job security. In firms where unions exist they become, not the agency which determines the rules, but a partner in their interpretation. Edwards also asserts that policies of bureaucratic control, or rule by company policy, have been employed as explicit strategies to avoid unionization.[127] The creation of internal labor markets is the prime mechanism for administering bureaucratic control, whether a union is present or not.

One of the first theorists of the internal labor market, Michael Piore, now writing in conjunction with Charles Sabel, asserts that this form of control results in new methods of mediating industrial conflict. In **The Second Industrial Divide** (1984), Piore and Sabel assert that the transition from technical to bureaucratic control is accompanied with a movement from substantive to procedural justice. Since workers' rights to wage increases, seniority and other benefits depend upon the job classifications they hold, rather than their individual characteristics, the shop-floor struggle becomes one of task classifications and allocative rules. Entrance into the "lines of progression" of the internal labor market implies acceptance of the rules, and the struggle shifts from whether or not company

policy has wronged a class of workers to whether or not the rules have been correctly interpreted. Piore and Sabel state that if no solution is pending in the normal operation of the grievance system the recourse is to binding arbitration. In return for this management has insisted that unions renounce the right to strike during the life of the contract.[128]

In summary, bureaucratic control entails a linking of the interests of the firm and the worker through a system of work rules. While determination of the rules themselves lies within the domain of "management prerogatives," workers have some input in the interpretation of them, as well as access to a formal grievance mechanism. Unilke earlier forms of structural control, such as Taylorism or Fordism, bureaucratic control uses a mix of positive as well as negative incentives. Workers who obey the rules and have the personal characteristics of the "good worker" (i.e., those who have internalized the dictates of bureaucratic control) advance. Those who do not are terminated. A final form of control which serves to further incorporate the interests of the worker into those of capitalist society as a whole has been advanced by Michael Burawoy (1979) and Andrew Herman (1982). These authors find that work arrangements of the post-World War II decades have been characterized by "hegemonic" forms of control. Hegemonic control is defined by relations of consent and legitimation replacing or supplementing management domination over labor.

Herman calls bureaucratic control a significant step in the development of hegemonic control. However the later forms go beyond the individual firm, where bureaucratic control is most evident. Hegemonic forms of control can best be seen in non-Taylorist "job enrichment" and "worker participation" schemes, which serve to create an "industrial citizenry" in the place of a working class.

> Their purpose is to inculcate ideological consent to the rule of capitalist social relations of production by internalizing control within the workforce. That is, rather than being technically directed to contribute to the production of surplus which will be privately appropriated, the worker becomes invested in the production of a surplus as a function of his/her own fulfillment.[129]

Burawoy (1979) argues that hegemonic control has had a significant impact on workplace relations. In his study of the Allied Corporation, a large producer of diesel engines, during the mid-1970's, Burawoy found great complicity to the incentive schemes of management. The "manly" opoosition to the bosses and the opposition to exceeding the collectively determined stint, chronicled by Montgomery, Clawson, and Braverman was not witnessed at Allied. The workplace culture of limitation of output was replaced by playing the game of "making-out" or exceeding the standards on an individual basis. The only vestige of the earlier culture of resistance is a ceiling of 140 percent of output standards, "recognized by all participants."[130]

Control and Capitalist Development

Forms of control have changed and adapted to the larger strategies of capital accumulation. However, a strict linear correspondence does not exist. Forms of simple control, which dominated the era of competitive capitalism in the mid-nineteeth century can still be found in the contemporary period characterized by monopoly capitalism. In fact, subsequent chapters of this dissertation will argue that residential carpentry in New Hampshire still exhibits the use of simple control. After identifying two basic modes of labor process control, dominative and hegemonic, Herman (1982) convincingly summarizes the relation between type of control and the stage of capitalist development.

> Just because the forms of control have developed chronologically, it does not follow that once a new form is developed the previous ones are discarded on the scrapheap of history....Each form is appropriate, though not exclusively limited to, a particular technical mode of production and the economic sector in which the firm was placed. Dominative forms of control will predominate in the competitive sector whereas hegemonic forms will most likely be found in monopoly firms.[131]

Perhaps the most far-reaching attempt to juxtapose modes of control with phases of capitalist development is employed by Gordon, Edwards, and Reich in **Segmented Work, Divided Workers** (1982). Synthesizing and extending earlier

work, they place the development of both labor process and labor markets within the context of the Social Structure of Accumulation (SSA).

The SSA framework was originally advanced by David Gordon (1980) as a hypothesis to better explain long cycles or long waves of capitalist development, which he considered an analytical "Achilles heel."[132] The approach was further refined in the 1982 collective work by Gordon, Edwards, and Reich when they applied the SSA framework to account for decisive qualitative changes within the capitalist mode of production. They state that modern Marxian studies of the dynamics of capitalist production remain indeterminant if they are solely at the abstract level. By integrating the concrete structures of the labor process and labor markets, Gordon, Reich, and Edwards seek to remove these indeterminacies. Moreover, they assert that SSA better captures the breadth and complexity of the uneven nature of capital accumulation than earlier theories which conceptualized capitalist development in stages of "competitive" and "monopoly" capitalism.[133]

The social structure of accumulation is defined as the institutional environment in which capital accumulation takes palce. It includes the money and credit system, the role of the state, and the character of class conflict, as well as the structures of markets for inputs and outputs. Moreover, the life cycle of these forces is instrumental in shaping the development and transformation of both labor markets and the labor process.

Each SSA is composed of three phases which are, in turn, associated with stages of the long wave. The first phase of the SSA is called "exploration." It begins during the stagnation stage of the long swing when capitalists begin to experiment with new modes of work relations in response to the crisis engendered by the overall economic downturn. The successful aspects of these structures become the basis for the second phase of the SSA as new labor process and labor market relations are generalized into the economy and society. This phase, entitled "consolidation," sets the stage for the period of rapid and prolonged capital accumulation. Finally, as the long wave with an undertone of expansion turns once again to stagnation, economic crises and workers' struggles undermine the basic structures of consolidation. In this "decay" phase, the effectiveness of controls over the labor process decline.[134]

Gordon, Edwards, and Reich argue that the American economy has experienced three such social structures of accumulation, and is on the verge of a fourth, as well. They term the first such SSA the period of initial proletarianization. Beginning in the 1820's during a period of stagnation, factory employment began in New England. Hampered by alternative employment in farming and domestic industry and lack of an extensive landless male peasantry, factory owners turned to the employment of women and children. The consolidation from the 1840's to the 1870's was aided by increased immigration, which augmented the

labor supply. This consolidation, however, did not result in the transformation of the labor process into the real subordination of labor to capital. Workers, operating under a craft system of organization, controlled the methods of production while "inside contractors" and subcontractors contracted with capitalists on an output basis and controlled hiring, firing, pace and wages. As a result the workplace of this period exhibited substantial diversity. This structure of proletarianized but untransformed labor decayed during the long period of stagnation in the 1870's through the 1890's. Increased competitive pressure and militant struggles of craftworkers set the conditions for the emergence of the second SSA.[135]

The social structure of accumulation based on "the homogenization of labor" experienced its exploration phase during the decay of the initial proletarianization phase and became consolidated by the 1930's. Employers attempted to overcome problems of competitive pressure and worker militance by mechanization, increases in scale and greater supervision. The strategies to increase both technical efficiency and control over workers were aptly described as "the drive system." Firms' abilities to so transform the nature of the labor process were increased by the merger movements and corporate consolidations of the period which gave corporations greater resources and a long-run framework of profit maximization. It is during this era that Taylorism and Fordism (or technical control) were implemented. Both Clawson (1980) and Kathy Stone (1974)

report the systematic drive to bring workers organized under the inside contracting system under the aegis of management control during this consolidation phase.[136] This epoch of capitalist development witnessed a narrowing of the distinction between the skilled and unskilled workers of the craft system and a rise of semi-skilled operatives. In short, labor was homogenized. The drive system experienced decay during the Great Depression of the 1930's. This profound crisis of world capitalism saw not only substantial declines in profits but a new form of labor unrest.[137]

The third SSA was explored in the 1930's when large corporations in basic industries responded to widespread strikes by recognizing industrial unions organized by the CIO. This social structure was consolidated in the post-World War II era, facilitated by the rapid capital accumulation of that era. Changing work relations, patterned after the 1948 UAW-GM contract, brought about a time of relative labor peace, based not only on collective bargaining but productivity bargaining. Industrial unions abdicated struggles to control investment decisions and the labor process in return for wage increases commensurate with productivity increases. Piore and Sabel also present detailed statistical evidence establishing the 1948 auto industry contract as the pattern for future collective bargaining and labor peace. [138]

The rise of relative peace between capital and industrial unions also resulted in the segmentation of

labor, which characterizes this post-war SSA, according to Gordon and his colleagues. While large core firms with stable demand and profit outlooks provided some employment stability, internal advancement, and the protection of written rules, firms in the less stable competitive sector (or periphery) still offered casual employment, unskilled work, and low wages; all remnants of the drive system. The institutionalization of bureaucratic forms of control associated with the core firms, and necessitating "good" workers, along with the continuation of pervasive discrimination, also institutionalized the virtual separation of primary and secondary labor markets.[139]

Finally, the economic stagnation of the 1970's and 1980's is resulting in the decay of the post-war labor accord and the social structure of accumulation based on labor market segmentation. The economic hegemony enjoyed by the United States in the 1940's has been replaced by trade deficits and increased foreign competition. The "guarantees" of stable employment and wage increases have been virtually eliminated with long term layoffs and pressures for contract give-backs in the core firms of basic industry. Moreover, employment expansion is most often found in secondary service and manufacturing firms, and much of this is being "sourced" offshore in the low wage labor markets of Latin America and the Caribbean.[140] Gordon, Edwards, and Reich find this to be ample evidence for the decay of the third social structure of accumulation, especially when viewed in conjuction with increased "blue-

collar blues" and "white-collar woes." They speculate that resistance to the Reagan program and the experiments in workplace democracy may well be the exploration phase of a new SSA.

Certainly the SSA framework is not without fault, nor is it universal. Indeed Michael Reich stated, during the 1985 ASSA meetings, that research on the social structure of accumulation is still in its infancy and needs a considerable amount of refinement, criticism, and historical validation to properly develop. One unresolved problem, from the standpoint of this dissertation, is that contemporary craftwork does not fit well into the analytical framework. The authors indeed admit that the segmentation approach is not universally valid for non-manufacturing industries.

> For manufacturing, the use of firm and industrial characteristics to categorize core and periphery produced considerable homogeneity within the core and within the periphery. A consistent application of these same criteria would suggest that all of mining, construction, transportation, wholesale and retail trade, and some of public utilities and communication should be allocated to the periphery. But this result conflicts with other evidence, casting doubt upon the validity of the methodology for these cases.[141] [Emphasis added.]

Control In Craft Industries

This conflict in results and methods has been partially resolved by several authors who have addressed the nature of control and work relations in craft industries existing in the era of monopoly capitalism. Although they lack the grand theoretical framework of the SSA approach, these authors have provided some important insights. Piore and Sabel (1984) state that some firms in all industries and all firms in some industries continue to organize their business on craft prinicples, despite the waves of monopolization in the nineteenth and twentieth centuries.[142] Focusing upon the construction industry, they find the absence of a separation of conception from execution, attributing this to the unique design of buildings. This results in the organization of work having to be redefined for each project. Accordingly, the workers, with their technical knowledge, are integral to the process of design and problem solving. This collaboration between workers and management means that clear-cut lines of responsibility are not distinguished. Rather, "the system of rights is built along with the building."[143]

A lack of an institutionalized system of rights leads to the dominance of substantive over procedural justice. Construction workers and bosses resolve differences by debating and agreeing to substantive solutions to particular problems, rather than procedural rules affecting that

problem. The reliance on substantive justice stems from the peculiarities of the construction trades.

> Construction projects are too short-lived, firms too unstable, employment too ephemeral for the time consuming process of grievance arbitration. Moveover, construction projects vary too much to justify - for either labor or capital - a precedent-based arbitration system.[144]

The lack of stability argument is also employed by Arthur Stinchcombe (1959) to explain the differences between bureaucratic and craft-based control systems. In this study, Stinchcombe attempts to show why bureaucratic control has not appeared on large scale tract home construction projects. He asserts that a professionalized labor force in housebuilding serves the same function as a bureaucratic administration in mass production, and is utilized because it is more rational and cost effective.[145] Like Piore and Sabel, he argues that the evaluation of work and engineering of the work process are decentralized to the work site itself where subcontrators, foremen, craftsmen, in conjuction with entrepreneurs, carry out technical and economic decision-making. Unlike mass production, where both product and process are planned in a corporate office, only the product is centrally planned in tract construction.[146]

The reason for this decentralized decision-making structure is that bureaucratic administration is dependent upon stability of work flow and income. Stinchcombe further

asserts that the construction industry is economically unstable. Citing cyclical and seasonal variations in volume and product mix, geographically small markets and the sequential character of the work itself as the prime sources of variability, he reasons that a vertically disintegrated structure, with workers' control of production, results in higher efficiency.[147] Stinchcombe concludes by stating, in agreement with Sherman Maisel (1953) that the main innovations brought about by the emergence of large-scale operative building were in the fields of marketing and finance, not in the organization or administration of production.

> The main innovation, then, is the planning of the product for ease of production, rather than in the planning of the productive process. This is the introduction of the conceptions of Eli Whitney on standardized parts, rather than of Henry Ford's innovation of standardize tasks.[148] [Emphasis in orginal.]

For Robert Max Jackson (1984) the extent of product markets and possibilities for standardization determine the conditions for business concentration and specialization. These structural dynamics, in turn, determine the potential for extending the division of labor. This in conjuction with the number of firms is the basis for bureaucratic administration of production. Jackson further argues that craft labor markets require at least at its origin, a low division of labor. However, following in the tradition of

Durkheim, he does not distinguish between the social and detail division of labor. One must conclude that Jackson means the detail division of labor, for he integrates the perpetuation role of subcontractors into his analysis, which implies a highly developed social division of labor.[149]

Jackson reports that the majority of construction firms fall in the small to medium range. Firms of this size develop personal rather than formal relationships of authority and utilize skilled labor, especially in the residential sector. Small firms and scattered workers have resulted in difficulties in organizing both housing contractors and workers. Consequently, the degree of open conflict has been minimal.[150] He concludes that the labor process in the building industry (and in printing) is not simply a holdover from an earlier historical period. Rather, these industries underwent considerable change during the course of the industrial revolution. Nonetheless, Jackson asserts that employers attempted to change the work process to reduce costs and increase productivity, not to consciously subvert the autonomy of the craftsman. As such, craft labor markets should be treated as a distinct process of development within capitalism, instead of a division within a universal, but segmented labor market.[151]

Perhaps the most insightful study heretofore has been accomplished by Bob Reckman (1979), a working carpenter as

well as a theorist. The complex and sequential nature of building necessitates not only physical but mental skills. A skilled carpenter must be able to layout a building, but must also constantly make the decision of "what is good enough." While there are clearly "wrong" solutions there is also no absolute dividing line between "right" and "wrong." Such decisions are always mediated by time, climate, and what the customer has been willing to pay. In addition, the sequential nature of building and the abundance of separate trades suggest a need for coordination (or basic control) in the early stages of building.[152] While the complex process of building was once the sole domain of the carpenter, capitalist development fragmented this unity. The fundamental source of this was the production of housing for profit. Seeking to minimize cost, the financiers of building let contracts to general contractors, who in turn divided the work among subcontractors specializing in one particular aspect. Reckman asserts that the rise of competitive bidding led to the rise of subcontracting as a method of increasing specialization.[153] This is distinctly different from large scale manufacturing where increasing management control of specialization and the division of labor resulted in the decline of subcontracting, as well as inside contracting.[154]

This historical trend has continued into the present era, and has affected social relations on the jobsite, according to Reckman. He cites H.U.D. data to show that sixty-five percent of new housing construction was built on

a speculative basis. The cost minimization necessitated by producing for the market entails not only increased specialization, but substitution of quickly installed components, often requiring specialized tools, for site-built work. While a building is as complex now as in any time in history, few carpenters survey the wide domain they did before the advent and perpetuation of subcontracting and specialization.

Despite this tendency, carpenters must still make the jobsite decisions of what is good enough. Although their domain has been reduced, today's carpenters are not "deskilled" in the sense that Braverman uses. Reckman builds a case that this is especially true in thirty-two percent of the 1978 housing market comprised of custom building and rennovation. The mid-course design changes and unforseen difficulties result in the need and opportunity for the carpenter to think on the job, as well as participating in conceptual or design work.[155]

Technological Change and Deskilling

A fundamental assertion of the labor process literature, most explicitly enunciated by Braverman, is that the process of capitalist development necessitates the "deskilling" of workers. It has been posited that this process began with the implementation of a detail division of labor, and was further developed with the separation of conception from execution. The imposition of narrow job

tasks upon workers, which replaced the production of a commodity from start to finish, and the removal of planning, or "brainwork," from the immediate producer, resulted in a reduced range of skills required. The historical development of specifically capitalist production, on a technological and scientific basis, opened new vistas of capitalist control. Commenting upon this process, Harry Braverman (1974) asserted:

> Machinery offers to management the opportunity to do by wholly mechanical means that which it had previously attempted to do by organizational and disciplinary means.[156]

In Braverman's analysis, as well as for those writing on technical control and Fordism, mechanization of capitalist production does not stand alone as a means of control, but is interrelated to the organization of the labor process. However, this application of science and technology does aid capital in its search for even greater increases in productivity and control of labor. This is accomplished on both the practical and ideological levels.

Mechanization extends the separation of conception from execution, thereby deskilling workers, by building the conceptual aspects into the operation of the machinery itself. Braverman traces the evolution of automatic machinery, beginning with the emergence of numerical control. This principle entails control of machinery by instructions encoded onto a perforated card or paper tape.

Although early prototypes were traced to the eighteenth century numerical control, the development of the concept was not generally applied until after the Second World War. This process fragments the work of the former craftsman into two distinct jobs. Operators are reduced to watching the machine while the engineer encodes the conceptual aspects in the form of instructions. The reduction of training time needed for the operator serves as a rationale for a reduced wage scale. For Braverman this is merely the Babbage principle in a technological setting.[157]

The revolution in electronics and the falling price of components, has allowed the development of the early principles of numerical control on a vastly more sophisticated level. Automated machinery is now able to monitor its own performance (and that of the operators) as well as anticipating and correcting errors. This reduces or eliminates the need for human labor. Patrolling and feeding become the main human inputs, and in many cases, feeding and materials handling are also eliminated.[158]

Braverman draws upon the research of Harvard business professor William Bright. Bright (1958) asserted that after a certain level of mechanization is reached, the relationship between skill and mechanization is inverse. This level is reached when the motivating force of activating the machine is based upon a predetermined control mechanism, instead of from the human operator. Bright asserted in opposition to the prevailing thought of the

day's corporate, governmental and union leaders that the operation of automated equipment requires reduced skill levels. (See Appendix B for a reproduction of Bright's chart on Mechanization and Skill.) While not directly applying the Babbage principle and calling for wage reductions, Bright does warn that implying a direct relation between automaticity and highly payed skilled labor will burden the firm's labor costs.[159]

Although Braverman agrees with Bright on the general relationship between increasing mechanization and declining physical and conceptual skills, he attributes this deskilling to capitalist control over technology, instead of the inherent properties of the machinery itself. Automation and advanced machinery are deployed in the interests of capital accumulation, not as the servant of humanity or to ease the burden of work.

> Thus, in addition to its technical function of increasing the productivity of labor - which would be a mark of machinery under any social system - machinery also has in the capitalist system the function of divesting the mass of workers of their control over their own labor. [160]

Braverman finds it ironic that those who have been subjected to the imposition of alienating capitalist control through machinery accept it as perfectly natural.[161] This "false consciousness" is partially attributed to the role of science. Arguing historically, Braverman asserts that in the era of competitive capitalism, technique preceded

science. For example, the development of crucial innovations such as the steam engine and slide rest were not the result of pure research but the experiments of craftsmen. Citing earlier historians of technology, Braverman concludes that the craft experimentation that led to the steam engine contributed more to the principles of physics than physical science provided to steam technology. However, with the coming of monopoly capitalism scientific research was separated from the immediate point of production and concentrated in corporate laboratories and universities.[162] Basic research then developed above and beyond the capacities of the deskilled production worker, confronting him or her not only as an alien force, but also as a condition of progress. The acceptance of greater knowledge of capital and its representatives, by the industrial citizenry, is of crucial importance in the establishment of hegemonic control.

Braverman extends his deskilling thesis beyond the confines of basic industry by a case study of the rapidly expanding clerical sector. Here he traces the role of clerical workers from highly paid and respected managers to low wage detail workers whose jobs are being further eroded by the advent of office automation. In the process clerical work shifted from a predominantly skilled male occupation to a deskilled female occupation.[163]

Braverman's assertion of the inevitability of deskilling, resulting from the strategies of capital

accumulation, has spawned another debate within the labor process literature. Edwards (1978) holds that accumulation of capital simultaneously de-skills and re-skills workers. He asserts the accumulation process does not simply create a mass of unskilled low wage workers, but a differentiated working class, segmented in response to workers initiatives and a crisis of control.[164]

Palloix (1976) also argues in a similar vein. The deskilling of the mass of production workers entails the over-skilling of technical and repair workers. Palloix links these concrete structures to the valorization process by stating that the simultaneous dequalification and hyperqualification is a characteristic of the reproduction of labor power.[165]

Braverman seemed to anticipate such criticisms, as he addressed the issue in **LMC**, published two years before Palloix's study and four years before Edwards'. Braverman's rationale was that technical workers were but a minor fraction of the labor force, representing a little more than three precent in 1970, despite rapid growth of these occupational categories.[166] He thereby dismissed this line of reasoning as relatively unimportant.

Finally, it is necessary to trace the effects of technology upon deskilling in the housebuilding trades themselves. Pursuing his fundmental thesis, Braverman stated that housebuilding was indeed feeling the inevitable impact of this process.

> This industry, because of the nature of its processes is still largely in the era of hand craftsmanship supplemented by powered hand tools, the lowest level of mechanization, makes continual and determined efforts to climb out of this disadvantaged position. It favors new materials, especially plastics, painting and plastering with spray guns (a single spray plasterer keeps a number of workers busy smoothing), and the pre-assembly of as many elements as possible on a factory basis (a carpenter can install six to ten pre-fabricated door assemblies in the time it takes to hang a single door by conventional methods; and in the process becomes a doorhanger and ceases to be a carpenter.)[167]

Moreover, Braverman says this trend is best exemplified by the rapid rise of mobile homes, and predicts such factory built dwellings will occupy a greater place in housing's future.

These observations are confirmed by Reckman (1979) but analyzed in a different context. Technological change that has come by means of pre-fabricated components and new materials has resulted in only partial deskilling. As products once made of wood are replaced by ones of glass, steel, concrete or plastic, the once eminent domain of the carpenter is subdivided among a variety of specialized trades. What were once traditional skills are no longer reproduced in a younger generation of carpenters, as they are performed by other trades. Some technical substitution has made virtually no impact upon the work process of the carpenter. Plywood has replaced solid wood, but there is little difference in the erection of the structure necessitated by this innovation. The introduction of

structural and finish components also is partially deskilling. Much of the exacting measurement and conceptual work is removed by the use of structural trusses, pre-hung doors, and factory built cabinets. However, an ample degree of physical skill is needed to assure that these components are properly fitted, plumbed, and levelled. Care must still be taken not to damage finish work and to prevent the carpenter's mortal enemy, water, from seeping in and rotting the structure. Reckman also acknowledges the impact of factory built housing but does not view it as the same immediate threat to traditional skills as Braverman does. He pictures its history as one of extreme fluctuations and gives data to show its relatively minor position. While technical and organizational changes have diminished the physical and mental skills of the working carpenter, these attributes are far from elimination.[168]

Summary

This review has attempted to systematize a relatively new but extensive collection of labor process and labor history writings into a coherent and evolving body of literature. Moreover, this literature has been located within the broader framework of capital accumulation. This review has been divided into two primary sections, of which the first takes a theoretical approach.

The focus is upon the debate spawned by the publication of Harry Braverman's **Labor and Monopoly Capital:** Is the proletarianization of the labor force an inevitable result of capitalist development? To help establish the positions in this crucial debate it was necessary to include and explain the important concepts of Marxian theory that pertain to the labor process. In the sections on abstract labor, absolute and relative surplus value, as well as the subordination of labor to capital, careful attention was paid to exploring the relations between abstract value categories and the concrete sturctures that impinge upon both strategies of capital accumulation and the development of work relations. The analytic separability of value categories and concrete structures was considered in the section on "monopoly capital."

The latter section of this review was cast on a more concrete and historical level. The problem of habituating workers to the dictates of capitalist production was approached in a two-fold sense. The mere stripping of the means of production from pre-industrial peasants and artisans did not automatically create a passive workforce. Nor did this problem cease with the dominance of industrial capitalism. Management efforts to habituate workers, both historically and on a day-to-day basis, required cultural changes beyond the immediate point of production, as well as efforts to control the workplace. Explicit methods of this control, from scientific management to more sophisticated forms, were traced and located within social structures of

accumulation. Finally, the differences in the structures of control were compared for industry versus craft methods of production, with special emphasis placed on construction.

The remaining chapters of this dissertation will attempt to extend this literature both theoretically and empirically by focusing upon residential carpentry.

Theoretically, I will argue that the contemporary organization of the New Hampshire housebuilding industry is predicated upon the formal subordination of labor to capital. Previous studies based on the subordination of labor to capital approach have utilized the formal subordination either as a theoretical construct or as a stage that has been historically transcended.

By focusing on the real subordination, the majority of labor process writers have neglected the craft sector. There are good studies, but each has it own limits. Jackson's examination of craft labor markets is posed in a manner that necessitates the presence of a union. Empirical results have shown that union presence in New Hampshire is, indeed, minimal. Reckman's study of carpentry is superb, but based on anecdotal data and personal experience.

My purpose is to establish the existence of the formal subordination of labor to capital by means of a rigorous empirical study of a representative sample of New Hampshire homebuilders. In addition, this dissertation, theoretically and historically posits the conditions necessary for the emergence of the real subordination, as well as establishing

their relative absence in the residential construction sector in New Hampshire.

Chapter Notes

1. Marx (1976) pp. 304, 995.
2. Shaikh (1978) p. 219.
3. Shaikh (1978) p. 220.
4. Palloix (1976) p. 47.
5. Sweezy (1974) pp. x-xii.
6. Zimbalist (1979) pp. xi-xii.
7. Zimbalist (1979) p. xii.
8. Palloix (1976) p. 46
9. Palloix (1976) p. 48.
10. Marx had used the term "unproductive" to describe work that did not create surplus value. Non-working supervisory personnel can be included in this category.
11. Braverman (1974) pp. 8-9.
12. Elger (1979) p. 58.
13. Elger (1979) p. 71.
14. Elger (1979) p. 63.
15. Elger (1979) pp. 66-67.
16. Elger (1979) p. 60.
17. See, for example, Edwards, Reich, and Gordon (1975), Doeringer and Piore (1971), Horn (1978).
18. Gordon, Edwards, and Reich (1982) p. 6.
19. Edwards (1978) p. 109.
20. Clawson (1980) p. 31.
21. Clawson (1980) p. 15.
22. Clawson (1980) p. 33.
23. Burawoy (1979) pp. xiii-xiv.
24. Burawoy (1979) p. 110.

25. Burawoy (1979) p. 194.

26. Braverman (1974) p. 52.

27. Braverman (1974) p. 55.

28. Edwards (1972) p. 101.

29. Mandel (1976) p. 42.

30. Rubin (1972) p. 144.

31. Rubin (1972) p. 144.

32. Braverman (1974) pp. 181-82.

33. Marx (1976) p. 327.

34. Marx (1976) p. 1016.

35. Palloix (1976) p. 49.

36. Marx (1976) p. 432.

37. Marx (1976) pp. 452-53.

38. Elger (1979) p. 63.

39. Marx (1976) pp. 943-1084

40. Herman (1982) p. 10.

41. Marx (1976) p. 1020.

42. Elger (1979) p. 64.

43. Marx (1976) p. 439.

44. Marx (1976) p. 1027.

45. Marx (1976) p. 1026.

46. Marx (1976) p. 1027.

47. Herman (1982) p. 11.

48. Elger (1979) p. 67.

49. Gartman (1978) p. 101.

50. Herman (1982) p. 12.

51. Gartman (1978) p. 105 and Palloix (1976) pp. 49-50.

52. Marx (1976) p. 1037.

53. Klitgaard and Ellis (1987).

54. Marx (1976) pp. 874-75.

55. Marx (1976) pp. 1034-35.

56. Elger (1979) pp. 65-66.

57. Herman (1982) p. 11.

58. Palloix (1976) pp. 49-50.

59. Gartman (1978) p. 105.

60. Braverman (1974) p. 251.

61. See, for example, Doeringer and Piore (1971) and Horn (1978).

62. Baran and Sweezy (1966) Chs. 3-7.

63. O'Connor (1973) pp. 13-23.

64. Shaikh (1978) p. 220.

65. Semmler (1982) p. 43.

66. Sherman (1983) p. 125.

67. Braverman (1974) pp. 70-75.

68. Braverman (1974) p. 78.

69. Pollard (1965) p. 161.

70. Marglin (1974) p. 98.

71. Pollard (1965) pp. 161-64.

72. Marglin (1974) p. 98.

73. Lazonick (1974) p. 26.

74. Pollard (1965) p. 166.

75. Pollard (1965) p. 180.

76. Ure (1835), quoted in Marglin (1974) p. 100.

77. Pollard (1965) p. 189.

78. Pollard (1965) pp. 189-190.

79. Lazonick (1974) pp. 29-31.

80. Ure (1835), quoted in Marglin (1974) p. 100.

81. Pollard (1965) p. 195.

82. Gutman (1977) pp. 15-19.

83. Gutman (1977) p. 26.

84. Gutman (1977) p. 38.

85. Montgomery (1979) p. 10.

86. Montgomery (1979) p. 10.

87. Montgomery (1979) p. 11.

88. Reckman (1979) pp. 75-76.

89. Montgomery (1979) p. 13.

90. Montgomery (1979) p. 14.

91. Edwards (1978) p. 109.

92. Szymanski (1978) pp. 47-50.

93. Elger (1979) p. 63.

94. Montgomery (1979) p. 16.

95. Christie (1956) pp. 26-27.

96. Christie (1956) pp. 79-81.

97. Jackson (1984) pp. 204-205.

98. Montgomery (1979) pp. 18-22.

99. Edwards (1979) pp. 127-128.

100. Edwards (1979) p. 153.

101. Herman (1982) p. 10.

102. Clawson (1980) pp. 20-21.

103. Aglietta (1979) p. 111.

104. Burawoy (1979) pp. 15-19.

105. Burawoy (1979) p. 30.

106. Edwards (1979) pp. 130-31.

107. Elger (1979) p. 78.

108. Braverman (1974) p. 86.

109. Gartman (1978) p. 103.

110. Clawson (1980) p. 30.

111. Clawson (1980) p. 202.

112. Clawson (1980) p. 210, and Braverman (1974) p. 90.

113. Braverman (1974) pp. 112-121.

114. Braverman (1974) p. 120, and Clawson (1980) pp. 205-206.

115. Chandler (1977) p. 277.

116. Edwards (1979) p. 101.

117. Edwards (1979) p. 102-103.

118. Montgomery (1978) pp. 517-520.

119. Palmer (1975) pp. 31-33.

120. Edwards (1979) pp. 25-28.

121. Edwards (1979) pp. 31-34.

122. Edwards (1979) p. 112.

123. Edwards (1979) p. 118.

124. Aglietta (1979) pp. 116-118.

125. Palloix (1976) p. 54.

126. Herman (1982) p. 11.

127. Edwards (1979) pp. 130-32.

128. Piore and Sabel (1984) pp. 113-14.

129. Herman (1982) p. 15.

130. Burawoy (1979) Ch. 4.

131. Herman (1982) p. 18.

132. Gordon (1980) p. 9.

133. Gordon, Edwards, and Reich (1982) pp. 20-21.

134. Gordon, Edwards, and Reich (1982) pp. 9-11.

135. Gordon, Edwards, and Reich (1982) pp. 13-14 and Ch. 3.

136. Clawson (1980) Ch. 3, 5, and K. Stone (1974) pp. 115-32.

137. Gordon, Edwards, and Reich (1982) pp. 14-15, and Ch. 4.

138. Piore and Sabel (1984) pp. 79-82.

139. Gordon, Edwards, and Reich (1982) pp. 15-16, and Ch. 5.

140. Gordon, Edwards, an Reich (1982) pp. 222-26.

141. Gordon, Edwards, and Reich (1982) p. 199.

142. Piore and Sabel (1984) p. 20.

143. Piore and Sabel (1984) p. 117.

144. Piore and Sabel (1984) p. 117.

145. Stinchcombe (1959) pp. 168-69.

146. Stinchcombe (1959) pp. 173-75.

147. Stinchcombe (1959) pp. 176-80.

148. Stinchcombe (1959) p. 183.

149. Jackson (1984) pp. 24-26.

150. Jackson (1984) pp. 31-32.

151. Jackson (1984) p. 324.

152. Reckman (1979) pp. 76-77.

153. Reckman (1979) p. 102.

154. Clawson (1980) argues that subcontracting and inside contracting declined with the advent of large scale industry in the 1920's (pp. 117-23). This trend seems to be reversing itself. For example, Bluestone and Harrison (1982) state the centrallization of production, which characterized capitalist development since the eighteenth century, is giving way to the greater flexibility of geographically scattered subcontracting (pp. 175-178.)

155. Reckman (1979) p. 102.

156. Braverman (1974) p. 195.

157. Braverman (1974) p. 200.

158. Braverman (1974) pp. 215-20.

159. Bright (1958) pp. 85-98.

160. Braverman (1974) p. 192.

161. Braverman (1974) p. 193.

162. Braverman (1974) pp. 158-64.

163. Braverman (1974) Ch. 15.

164. Edwards (1978) p. 109.

165. Palloix (1976) p. 53.

166. Braverman (1974) p. 241.

167. Braverman (1974) pp. 208-209.

168. Reckman (1979) pp. 76-77, 95-98.

CHAPTER III

HISTORICAL PRE-CONDITIONS

In this chapter I will develop a basic framework of structural pre-conditions necessary for the rise of specifically capitalist production and the real subordination of labor to capital. It is not my purpose to provide a detailed chronological account of the development of American capitalism in general, or the housing industry in specific. Instead I would like to outline a set of four structural conditions which must be implemented for large scale industry to emerge. This chapter is but the first step in a much larger work. The mere presence or absence of these conditions serves as a valuable analytical starting point, but does not sufficiently capture the subtleties of capitalist development. While I assert that specifically capitalist production can not evolve without prior structural achievements being achieved, the analysis of this chapter is not advanced as the definitive word on development theory. A fuller understanding must include the dialectical interaction of these conditions, ranging from the interactions of social classes with each other, to the way one structural condition affects another. Some consideration must be paid to how these factors affect the evolution of the structures themselves. In other words, how do social relations affect structural conditions. In

addition, special attention must be paid to the level of abstraction in which the analysis is cost. My purpose here is to pose general conditions of development in order to better understand the evolution of the housebuilding sector. However, all conditions of the housing industry may not be generalizable. A complete analysis must clearly differentiate between the particular industry at hand and the economy as a whole. Finally, it is possible that industries with conditions quite similar to residential construction have evolved in entirely different directions. Room must be made in the analysis for such subtle variations.

Nonetheless, without the presence of the following structural aspects, the viability of the real subordination of labor to capital seems highly in doubt.

Many previous studies have held that specifically capitalist production, or modern industry, rests on a technological foundation. Alfred Chandler holds this position. In comparing the development of mass production with the rise of mass distribution, he reasons that the change in production came more slowly. Mass production required significant technological as well as organizational change.

> The basic difference between the coming of mass production and mass distribution lies therefore in technology. Mass distribution came primarily through organizational innovation and improvement, using the new forms in transportation and communication. Mass

> production, on the other hand, normally called for technological as well as organizational innovation.[1]

This innovation, in conjunction with a more intensive use of energy, allowed not only an increase in the speed of throughput (or volume of input flow) and level of output, but also a falling capital labor ratio. In short, the new mass production industries were capital-intensive, energy-intensive and management-intensive.[2]

The changing proportion of capital and labor also forms the basis of Marx's theory of technological change and accumulation. As mentioned in chapter II, Marx's own analysis of the real subordination held that this form of organization was based on "technological and other factors." Indeed Marx had devoted an entire chapter, entitled "Mechanization and Large Scale Industry," to linking both accumulation, crisis, and the transformation of the labor process with the pace of technological change. Many of the contradictions of the labor process, which emerged in attempting to divide and control a recalcitrant and skilled workforce, were seemingly "solved" by the introduction of machinery. However, new contradictions emerged in the process of valorization. The drive to improve productivity, decrease unit costs, and extract relative surplus value pressures capitalists to invest in ever more complex and expensive machinery. As a result, an increase in the organic composition of capital $(\frac{c}{v})$ and a tendency for the rate of profit to fall emerge as structural dynamics of

competition and accumulation in the area of mechanized and large scale industry.

However, the pace of technological change and mechanization are not even. A rising organic composition of capital implies differential rates of growth and profit in capital goods and consumer goods industries. For Mandel (1975) this process of uneven development and disequilibrium between different departments is a result of the very process of accumulation.[3]

One must also account for different levels of mechanization, growth and profits among the branches of industry within a department. Certain producers of consumer goods, such as automobiles and household petrochemicals, are highly automated while the production of clothing remains relatively labor-intensive. Chandler alludes to the connection when he states that new methods of transportation and communication made possible unprecedented levels of production. However, he also reasons that large-scale production has been adopted unevenly and many industries, particularly those in the building trades, have remained relatively un-mechanized and labor-intensive, despite the broader economic process.[4]

I would like to develop this theme to a further degree by specifying four conditions, broader than changes in transportation and communication, that must be met in order for large scale mechanization to be feasible. These conditions are interrelated, but can also be separated for analytical purposes. The conditions are:

1. the development of standardization in product and process;
2. a geographically widespread market;
3. stable growth in demand;
4. positive and effective State action.

On the basis of these structural provisions the feasibility of monopoly concentration and centralization are built. Within this framework the wherewithal for firms to technically divide labor, implement schemes of "divide and conquer" is found, as well as the ability to maximize profits in the long run, provide internal labor markets, and generally attempt to tie the interests of the worker to those of the company. On the other hand, if an industry is operating in a climate where these structural attributes are not present, then one would expect such an industry to be composed of small scale producers utilizing few professional managers, as well as personal and informal methods of controlling workers.

Standardization

The first of the crucial pre-conditions for the emergence of specifically capitalist production is the standardization of both product and process. This is the most fully "technological" explanation of the rise of large scale industry. However, the standardization of process, or

interchangeability of parts, is also fundamentally tied to control of labor and skill requirements.

Although the use of interchangeable parts can be traced to Eli Terry's Connecticut clock factory in 1806, interchangeability of assembly components is most often associated with the manufacture of firearms. This method, which allowed the large-scale assembly of reasonably working products without adjustment, become known as the "American System of Manufacturing" in 1851.[6] In addition to simplifying repair and maintenance, the use of interchangeable parts revolutionized manufacturing by dramatically reducing the skill requirements needed for production. Nathan Rosenberg asserts that weapons were among the first products to use interchangeability due not only to the need for simplicity of maintenance under battlefield conditions, but also that during the Napoleonic wars the British possessed some 200,000 muskets rendered useless by want of skilled armorers to repair them. Interchangeable musket parts allowed soldiers in the field to make repairs from parts "cannibalized" from other firearms.[7]

Yet, according to Rosenberg, the most significant aspect of interchangeability was the elimination of the skill requirement of "fitting." To fit non-interchangeable components together the skilled artisan not only had to fabricate the often complicated rough shape (such as a gunstock), but also need make a series of fine and subtle adjustments to insure proper operation. Not only was this

process labor-intensive and slow, but it required an all around craftsman. Rosenberg quotes Henry Ford's observation that: "In mass production there are no fitters."[8] Specialization became more feasible with the elimination of fitting, allowing not only increased speed of production but greater degrees of controlling detail workers. Chandler (1977) develops this point in his detailed study of the Sringfield Armory. Rosewell Lee, administrator of the armory, instituted a series of production controls, the foremost being inspection of each individual's work and accountability through each worker's output and quality being traced back to their "mark" on the final product. This not only served as a system of quality control, but also as a basis for the accurate determination of piecework wages.[9]

The viability of interchangeability depended on prior technological development, especially the availability of precision parts from the metalworking industry, Both Chandler and Rosenberg hold that this technological constraint was transcendend in the mid-nineteenth century and the principle of component standardization penetrated both the consumption and investment goods industries.[10]

Standardization of both process and product play a role in the historical development of housebuilding in the United States, especially as regards the need for fitting. One of the most widely recognized technological changes in residential construction was the appearance of the balloon

frame in the mid-1830's. This change replaced the joining of large posts and beams by means of complex mortise and tenon joints with the nailing of two-by-four studs. The replacement of a small number of complex joints on large structural members with a large amount of nailed, and structural studs, dramatically economized on skilled labor, which was in short supply on the American frontier in this time period. One or two people could erect a balloon-framed structure; a feat which was impossible for the heavy timber-formed structure, which required a large crew simply to lift the heavy structural posts and beams into place. The noted housing historian, Margaret E. Woods, cites the speech of an Indian agricultural spokesman who claimed:

> "If it had not been for the knowledge of balloon frames, Chicago and San Francisco could never have arisen, as they did, from little villages to great cities in a single year.[12]

This dramatic innovation, was itself dependent upon two earlier technological innovations. According to both Giedion and Reckman the rise of the balloon frame was dependent upon prior advancements in sawmill technology and the mass production of nails.

The heavy timbers used in the post and beam frame were generally cut by the pit saw. The pit saw cut only on the downward thrust, pulled down by the sawyer in the pit, who was regularly showered with saw dust, and pulled up by a helper standing on the wooden beam.[13] Sawing 2"x4" studs in

this manner was an extremely inefficient use of labor. According to Reckman:

> Improvements in the application of steam and water power to sawing logs and the development of the circular saw meant that the cutting of many smaller uniform pieces was no longer the expensive, difficult and backbreaking labor it had been in colonial times.[14]

The other technological advancements which helped enable the balloon frame was the invention of machinery which produced cut nails to replace hand-made wrought nails. Giedion partially attributes the rise of Chicago framing to the reduction in nail prices after the successful patenting of nail-making machinery in 1806 by Jesse Reed.

> When the manufacture of cut nails was first undertaken, wrought nails cost 25 cents a pound... This made their use for houses and fences difficult. All this changed with the introduction of machinery. The price of nails was suddenly reduced. In 1828 the production was so brisk that the price was reduced to 8 cents a pound. In 1833 the rapidity of production brought the cost down to 5 cents... in 1842, 3 cents.[15]

These two techniques made possible a technological change in building which would have been prohibitively expensive and time-consuming in the days of hand-made framing inputs.

The effects of balloon framing upon skill levels is subject to a more extensive debate than its solely technical

aspects. Giedion is convinced that the balloon frame marks the penetration of industrialization into housing, with the result being a reduced skill requirement.[16]

On the other hand Reckman (1979) argues that a decline in skill levels was not the automatic result of the development of balloon-framing. He reasons that the new method of framing removed more of the unskilled "bullwork" of lifting the heavy timbers into place than the skilled work of carpentry. Given the greater number of framing members and structurally important cuts to be made, Reckman asserts that the layout stage of a balloon-framed house is more complex and exacting than that of a post and beam structure. Although cutting and assembling is quicker in a balloon-frame, the labor-saving did not arise from changing skill inputs.[17]

Although I am in basic agreement with Reckman, I do consider this to be the historical conjuncture in which carpentry was separated from joinery. The mortise and tenon joints, once a basic skill of the house carpenter's repertoire, are now cut only by cabinetmakers, and the carpenter who builds an occasional timber-frame structure. The removal of this requirement fractured the woodworking trade into distinct subdivisions, and joinery skills are possessed by few framers. However, the technological change did not remove the skilled layout stage from carpentry, nor did it fracture the unity of conception from execution. Certainly the removal of the knowledge of joinery is a deskilling of the all-around woodworker, but far more

conceptual deskilling would be required to reduce a balloon-framing carpenter to the level of unskilled.

Moreover, while the balloon frame reduces the complex joinery of the post and beam structure, it by no means eliminates the need for fitting. Studs must be constantly cut and trimmed and the walls must be erected plumb and level. If the foundation sills are not carefully adjusted with shims the process of erecting walls will experience a considerable amount of continual adjustments. Finish work was not significantly changed by the eclipse of the timber frame.

However, inroads into the skill of the carpenter were made in the 1870's when a host of woodworking machines dramatically reduced the cost of finish trim. This not only eliminated the carpenter's winter work of fashioning hand-made trim, but also allowed the use of semi-skilled "green hands" who specialized in the installation of pre-fabricated components.

> The windows, doors, and other parts of the building which streamed off the machine, standardized, complete, and ready for installation, allowed for easy subdivision of the carpenter's work. Carpentry was gradually divided into door hanging, floor laying, stair building, and a score of other specialized tasks by competing contractors who only paid one-half the wage of a fully trained, all-around carpenter.[18]

In summary standardization of inputs as well as of dwellings constructed have led to a degree of de-skilling. It stands to reason that a contractor building a low volume of custom homes or renovating historical structures would need to employ a more all-around skilled carpenter than a contractor constructing a large number of standard units. Although standardization allows for an increased degree of specialization, whether this has indeed occurred is an empirical question to be answered in chapter five.

Extent of the Market

The effect of a limited market on the development of capitalist production was recognized as early as the eighteenth century. In the **Wealth of Nations**, Adam Smith declared that "the division of labor was limited by the extent of the market."[19] Piore and Sabel (1984) extend this argument by saying it makes little sense for capitalists to rearrange their production process to increase output if there was not a market for the increase. This is especially important if the inflexible, resource-specific nature of the productive rearrangement made it expensive to switch the resources to other types of production.[20] Indeed the limitation of a geographically narrow market would inhibit both the technological and organizational development of the capitalist firm.

Chandler (1977) argues that a geographically widespread market, based on improved transportation and communication,

was integral to the success of the early mass production industries.

> Without a steady, all-weather flow of goods into and out of their establishments, manufacturers would have had difficulty in maintaining a permanent work force and in keeping their expensive machinery and equipment operating profitably.[21]

He attributes this improvement in transportation to the railroad and communication to the telegraph, whose wires were strung on the railroad rights-of-way. By the 1850's the railroads became the most popular form of overland transportation, and had even supplanted water transportation. Railroads were cheaper to build, afforded better communication, and were not dependent on a seasonally variable supply of water, which especially limited canal transportation, or on tides.[22]

Railroads helped provide regular schedules and standardized marketing arrangements. According to Chandler this was integral to the development of a national market, as it removed commodities from local and regional constraints.

Railroads were also instrumental in developing the organizational techniques to run a large geographically dispersed company, and the massive need for money was a prime impetus for the development of the capital market in the United States. In short, they were the first modern business enterprise, and the industry which set the pattern for further industrial and commercial development.[24]

It was the integration of mass marketing, made possible by the railroad, and the technologies of mass production that yielded the prototype of the modern corporation.

> The first "big businesses" in American industry were those that united the types of distributing organization created by the mass marketers with the types of factory organization developed to manage the new processes of mass production. They were the first enterprises to combine the economies of high volume throughput with the advantages of high stock-turn and generous cash-flow.[25]

Without the mass marketing arrangements in a widespread market the success of cost-reducing technological changes would have been greatly limited. In contrast to those who argue that industrial concentration arises mainly on the basis of economies of scale through superior technology, Chandler boldly asserts that mergers were only successful if they were in industries where mass production could be integrated with mass distribution.[26]

The widening of markets also extended the relations of capitalism in the labor process. According to George Rogers Taylor (1977) the development of large scale and extensive markets hastened the demise of the handicraft system. As markets widened, under the control of merchants, competitive forces resulted in a pressure to reduce costs. Those craftsmen that were able to survive were those who either cut the wages of skilled workers, or reorganized their production processes. This entailed a more extensive

division of labor and the employment of women and children who were assigned unskilled tasks.

> A few of the master craftsmen continued to do custom work of high quality for the well-to-do. But the great mass of them, coming gradually under the shadow of the merchant capitalist, produced a relatively cheap, standardized product for the rapidly expanding American market.[27]

This general trend was also present in the building trades. Christie (1956) traces the organization of the Philadelphia Carpenter's Company in 1791, as well as the modern-day United Brotherhood of Carpenters and Joiners, to the wage cuts, piecework, and specialization forced upon formerly independent craftsmen by merchants and speculators.[28]

The extension of markets in general has impacted the spatial configuration of housing, which has, in turn, affected housing markets in particular. David Harvey (1982) ties the development of differential patterns of built environments to the very process of capitalist development. He argues that the transformation from the formal to the real subordination of labor to capital has been accompanied by dramatic physical transformations as well. Capital and labor have concentrated in urban areas, yet the variations and extensions of the systems of transportation and communication that first extended markets allow for mobility

in the face of concentration. Moreover the impact of this geographical development has been uneven.[29]

In addition to concentrations of population in the nation's cities the housing patterns of the twentieth century reflect a dramatic rise in suburban living. By 1970 Americans living in suburbs represented 57 percent of metropolitan populations, and 37.6 percent of the national population.[30]

On an abstract level Harvey (1984) traces the differential patterns of working class, middle class, and professional neighborhoods to the conditions of the reproduction of labor power. He argues that the logic of residential differentiation stems from the fact that social infrastructures that help produce one type of labor power may preclude another.[31] In short, professionals and working class people rarely inhabit the same neighborhoods. Pat Ashton (1984) analyses this same phenomenon on a more concrete level.

> It happens, however that historically it has been highly profitable to construct relatively homogeneous communities. Thus we have the tract homes of the 1920's and 1950's, the sprawling single-family subdivisions of the 1960's, and the elaborate town-house and condominium developments of the 1970's.[32]

While raising the ire of song writers and social critics,[33] the concentration of suburbanization added a degree of standardization to housebuilding that allowed the development of specialization and some deskilling. Sherman

Maisel develops this line of reasoning in his study of housebuiding in San Francisco in the late 1940's. He found that most large tract builders constructed suburban communities of standardized houses stripped of all extras. This large scale, geographically concentrated operation allowed labor to be organized on a "mass production" basis; which compensated for the lack of highly developed individual skills.

> When a tract is large there must be as many as ten crews with some job specialization within each one. As an example of intracrew specialization, in the finish crew one man may hang doors, one windows, one do the trim, and so on.[34]

In summary, an extensive market is crucial to the development of capitalist production. Without arrangements to mass market the output, the labor organization of mass production would be unfeasible. If a housebuilder operates over a geographically wide area, or builds in a market which augments demand by a physical concentration of population, one should expect a detailed division of labor as described by Maisel. On the other hand, if a builder is limited to a small rural or semi-rural area, one would expect to find the development of the technical division of labor to be circumscribed by the small scale of the market.

Demand Stability

While the rise of large scale industry was partially dependent upon the development of an extensive and far-reaching marketing network, the continuing feasibility, in turn, depends upon the stability of demand. The literature relating the stability of demand to the nature of the labor process and labor markets is, itself, cast within the context of the large corporation or "Monopoly Capitalism." Monopolization, or the concentration and centralization of capitals, is not explicitly advanced as a pre-condition for the feasibility of specifically capitalist production. Instead the large scale firm is simply employed as the context in which the stability of demand has occurred. Baran and Sweezy (1965) have advanced the thesis that the large corporation maximizes profits in the long run. Profit maximization for the large scale firm entails the search for the greatest possible increase in profits, "subject to the proviso that the exploitation of today's profit opportunities must not ruin tomorrow's." The large firm, with its command of resources and insulation from competition in the product, is not subject to the same pressures as the small firm in the competitive sector. The competitive firm can do nothing but maximize its profits in the immediate period, as a failure to do so would result in the rate of return falling below the norm for the industry, which would culminate in bankruptcy.[36]

Although removed from the rigors of price competition and lack of control over price, the large corporation is not

exempt from competitive pressure. Edwards, Reich and Gordon (1975) have argued that the need to fully utilize a large capacity forces the firm in the monopoly sector to stabilize demand and extend the planning horizon.[37] Baran and Sweezy assert that this is accomplished by the diversion of corporate resources into advertising. The authors assert that advertising plays a similar role to innovations, as regards investment opportunities. A sales effort creates a demand and allows for investment that would not take place in its absence, as well as absorbing the already created surplus.[38]

Piore and Sabel summarize the relation between the productive potential of the large scale firm and the stability of demand when they state:

> Mass production was profitable only with markets that were large enough to absorb an enormous output of a single, standardized commodity, and stable enough to keep the resources involved in the production of that commodity continuousiy employed. Markets of this kind, like markets in general, did not occur naturally. They had to be created. In the United States, the modern corporation was organized for this purpose.[39]

This role of the large corporation extends beyond its basis of the stabilization of demand. According to Richard C. Edwards, the broader process of corporate stabilization entails the internalization of a myriad of potential threats. Strategies of big firms have included vertical

integration to insure stability of raw material supplies, the institutionalization of research and development to reduce the risks associated with external technological change, and a tendency to finance expansion from retained earnings. Most importantly, from the viewpoint of the labor process, large firms attempted to internalize the threat of labor instability by the creation of systems of labor control.[40] Gordon, Edwards, and Reich (1982), assert that this these systems flowered in the United States during the 1920's, after the product market had been stabilized. The authors reason that corporations felt pressed by the problems of turnover produced by the earlier systems of labor-management relations: the drive system and the foremen's empire. Control systems developed during this era include welfare capitalism, scientific management, the professionalization of personnel administration, and an increase in the percentage of non-production, or supervisory, employees.[41]

The systems of labor control were advanced as a way to tie the interests of the worker to those of his or her employer. These ties had been severed by the labor unrest that accompanied the decay of the drive system, and a viable system of control was needed to circumvent the instability of industrial conflict.

The advent of the Great Depression of the 1930's saw a resurgence of worker protests concerning not only wages and employment, but also management control over the quality and pace of work. According to Gordon, et al, (1982) the union

organizing drives of the period addressed the control issue by demanding the establishment of grievance procedures, which were rare before the 1930's. The authors hold that grievance procedures were a primary organizing goal, second only to union recognition itself.[42]

Grievance systems, along with seniority provisions, and job ladders, in turn form the basis for the internal labor market (ILM). The ILM provided benefits and stability to both workers and employers. The demands of the CIO for grievance mechanisms were met by this structure. In addition workers benefited from enhanced job security and chances of advancement within the firm. On the other hand, the ILM reduces turnover, thereby increasing stability, for the employer.[43]

Burawoy (1979) claims that the internal labor market is a major factor both in securing and obscuring surplus value. Rewards for seniority foster commitment to the enterprise, and greater output, on the part of the employees. Moreover the mobility between jobs reduces the resistance to management control systems in any one department. This also transfers potential conflicts from a hierarchical to a lateral direction, as boss-worker disputes become conflicts between workers.[44]

In summary, long range systems of labor control necessitate the development of product market stability. Braverman (1974) attributes this realization to Taylor himself, who believed that the volume of output must be

sufficient to keep the planning department employees fully busy all the time.[45] A system of scientific management would not be feasible if the volume of output fluctuated to such a degree as to render the planners of work cost-ineffective. The writers within the traditions of labor market segmentation and the labor process have cited the historical development of the larger "core" corporation as the context for stability in both product and labor markets. The need to stabilize the realization of the output of mass production forces the development of systems of labor control which foster stability, while the insulation from price competition provides the wherewithal to implement such systems.

On the other hand, industries in which demand is unstable should exhibit a less developed system of labor control, as well as high turnover. Residential construction has been a historically unstable industry, and one should expect informal, inexpensive, and personal control systems to dominate labor management relations.

Cyclical Instability in the Housing Industry

There is a long standing literature on "the building cycle," encompassing both long swings and cycles of short duration. Attempts to explain the causes of cyclical instability have relied on structural characteristics of the housing sector, Keynesian investment theory, analyses of credit and financial markets, as well as the Marxian position of fundamental contradictions of capitalism. Early

studies tended to stress the structural nature of the housebuilding industry in the generation of long-waves. Studies conducted in the post-depression period concentrated on the role of credit and the shortening of the cycle. Moreover, the analysis of housing cycles and housing policy necessitates the inclusion of the role of the state. Specific attempts at ameliorating the volatility of housing cycles by government policy, as well as these programs' successes, will be explicitly dealt with in the following section.

Approaching the problem of fluctuations in housing production from an institutional perspective, Arthur Burns attributes long cycles in residential construction to certain characteristics of dwellings and human beings.[46] The relevant dwelling characteristics are durability and immobility while humans are also assumed to be relatively immobile and uncertain as to the future.[47] Burns asserts that these conditions will generates long cycles under any form of economic organization. He posits a "Collectivist Planning Council" to determine housing investment and provides hypothetical data to show that the interaction between the need for replacement investment and population growth will generate cycles on a national level.

> The timing relationship between construction and changes in population will tend to be irregular. And, just as the combination of required replacements and population changes may produce long cycles in the construction of a

> community even when there are no such cycles in population changes, so the combination of required replacements and population changes may produce long cycles in the total construction of the country even when there are no long cycles in changes of population in either the component areas or the country as a whole.[48]

The length of the building cycle is attributed to the structure's durability as affects the cycle of replacement investment. Moreover, the immobility of humans and dwellings means that the surplus of one area cannot be diverted to fulfill the needs of another. Neither will human beings quickly move to accomplish these ends. As a result Burns states that fluctuations in housing volume will be of a greater magnitude than changes in population itself.[49]

While cycle-creating forces are present even in a planned economy, the search for pecuniary gains in a market economy further exacerbate the causes of instability. Periods of speculation, driven by lax methods of financing construction and ease of credit availability, lead to overbuilding and enhance the maladjustment between supply and demand. In addition the institutional structures of durability, methods of title transfer, and the uncertainties of the profit motive render the corrective method a slow one.

Periods of overproduction, followed by slumps are the normal condition for the industry, despite the existence of the restorative mechanisms of competitive forces.

> Once a corrective adjustment gets firmly under way, it tends to be carried too far, so that errors are produced which in turn require correction. Hence long cycles operating on the reaction principle are likely to occur in residential construction, no matter what the period of the cycles in the changes in the demand for the use of the dwellings may be.[50]

An earlier argument by Clarence D. Long (1940) also stresses the relation between housing cycles and housing demand. Citing empirical evidence from 1864 to 1934, Long chronicles the cyclical instability of investment goods as a whole and presents evidence to show that building is the largest single category of investment goods. The inducement to invest in building is governed by the marginal efficiency of capital so that the capital value of any building project must exceed its cost. All inducements to invest, irrespective of institutional considerations (such as changes in population, technological advancements and the actions of governments and labor unions), operate through the interaction of marginal cost, interest and discount rates, and expectations. Investment in buildings is simply a special case of this general principle.[51]

Like Burns, Long assigns an important role to housing's durability in the timing of long building cycles, which average approximately twenty years. The durability of housing which necessitates a large outlay in an initial period precludes small amounts of steady replacement investment until a large increase in consumption is

forthcoming. This interaction of durability and the acceleration principle results in longer-than-Juglar cycles.

> Consequently, when consumption first rises, a large investment may be in order; but if periodic consumption subsequently rises by smaller amounts, as would seem pretty near inevitable, the durable investment agents already in existence may require smaller and smaller additions and the periodic output of the investment goods industries such as building may fall even while periodic consumption is still slowly rising.[52] [Emphasis in original]

Alvin Hansen, writing in the early 1940's, surveyed much of the earlier work on building cycles, including that of Long, and found a cycle of long duration, averaging 17.5 years. He traces the cyclical nature of investment in housing to rental markets. Depressed conditions in house construction reduces new output, which in turn leads to rising rents. Favorable rents lead to an expansion of building and a cyclical upswing, which continues until the boom in new construction increases its cost. The squeeze on profits due to rising input prices sets the condition for another cyclical downswing. Moreover, given housing's share in the totality of investment, changes in national income reinforce the conditions for both upswing and downswing created within the housing sector itself. Indeed, major depressions have coincided with significant downturns in housing since 1878.[53]

The length of the cycle stems from the structural conditions of adjustment within the residential construction

industry. Depressions in housing result in the exodus of small contractors and skilled building trades workers into other lines of work. Christie (1955) documents the severity of the depression of the 1930's upon the construction trades. Citing data from the studies of the National Recovery Administration, he states that 67 percent of carpenters were unemployed as of 1932.[54] The upswing is thereby delayed as a result of the difficulties encountered in the recruitment of entrepreneurs and skilled workers. Additional lags are attributable to the long periods of time necessary to complete the structures themselves. Consequently these structural conditions mean that the adjustment of supply to demand is difficult and prolonged.

In summary, Hansen finds that the cause of building cycles is the fluctuation in rents resulting from the lack of timely adjustment of available housing space to the number of families desiring shelter.[55] Like Long, Hansen was of the opinion that the marginal efficiency of capital was an inducement to invest.[56] Long, however, assessed the impact of the primary inducements to invest for the pre-New Deal housing cycles. He found little evidence to support the assertion that long building cycles were caused by changes in building costs, and even less evidence that interest rates were a primary factor in housing fluctuations.[57]

Theories of cyclical instability after the impact of New Deal housing programs were to take an abrupt shift in

focus. Building cycle theories written in the 1960's and 1970's asserted that these cycles had become short, and were significantly influenced by both fluctuations in interest rates and governmental policies. Jack Guttentag asserts while long cycles were primarily demand-driven, the post-New Deal cycles had become shorter and were supply-determined. The cause of short building cycles is to be found in the changes originating in the mortgage market.[58] He also found that the pro-cyclical affects of building activity before the 1940's had become counter-cyclical in the post-World War II era. Guttentag attributes these changes to the supply of mortgage credit. Decreases in mortgage yields result in a rising volume of building activity. In addition a liberalization of the terms of mortgage credit, in short a reduction in interest rates, also acts as stimulus to residential construction.[59]

A more sophisticated argument along these lines is offered by Neil Berkman (1979). Acknowledging the historical volatility to housing starts, he locates his own position within the domain of "the credit sensitive nature of housing demand and residential mortgage finance.[60]

However, he transcends the limitations of the earlier literature by separating the relationship between housing starts and mortgage finance into two distinct effects: credit availability and credit cost. The credit availability argument attributes the downturn in housing construction to the process of financial disintermediation.

As market interest rates rise in the latter stages of an economic expansion, money capital is diverted from low return investments to those offering higher yields. Maximum deposit rates offered by thrifts and commercial banks were limited by Regulation Q. This resulted in a loss of deposits as investors searched for higher rates of return in money markets, commercial paper, and Treasury securities. Consequently less credit was available for mortgages and construction loans, which exerted a negative impact upon the volume of new housing. The availability of credit would once again increase only when the gap in interest rates was closed, after the next recession.[61]

The alternative argument for short cycles in housing is the cost of credit, which accents the demand side of the mortgage market. Demand for housing is postulated as the present value of a long term stream of services, with the mortgage rate serving as the discount rate. Holding prices, the quantity of housing, and wealth to be constant, an increase in the mortgage rate produced a decline in housing demand, as the present value varies inversely with the discount rate. Moreover, a general increase in interest rates reduces the value of a family's financial assets and housing demand also falls due to the decline in wealth.

The importance of separating the effects of the cost of credit and its effect upon housing demand is that the reduction in the supply of funds cannot be shown to be the sole cause of instability of housing output. The logical conclusion of the credit-cost hypothesis is that stabilizing

the cost of credit will stabilize housing production. However, Berkman finds such a cost stabilization to be an unlikely scenario, as fluctuations in the interest rate are an aspect of a much broader monetary policy.[62] The author found that in general the credit-cost hypothesis predominated the credit availability thesis, except in times of "credit crunches," and extreme mortgage rationing. Changes in credit cost are therefore held responsible for the timing of housing cycles, while credit availability is the primary determinant of the severity of fluctuations in residential construction.[63]

This analysis adds a dimension of sophistication to the earlier literature in that it traces the effect of changing interest rates upon the consumers and producers of housing. While Berkman states that the credit cost and credit availability hypotheses are not mutually exclusive, he stops short of explicitly developing the potential contradiction of policies based upon them.

The inherent conflicts in housing finance and housing policy have been insightfully explored by Michael Stone. Both the production of housing and its circulation, through the residential finance system, take place within the broader context of capital accumulation, which is itself inherently unstable. The process of decreasing unit cost and creating prosperity by technological change and increases in the organic composition of capital lays the foundation for depression when the rate of profit falls.

Stone's expressed purpose is to link housing and mortgage lending to the dynamics of accumulation in the American economy.[64] An important aspect of housing lies in the fact that housing is more than an expensive consumption good. It is also the principal locus of the reproduction of labor power. The production and realization of relative surplus value entails a reduction in the cost of this social reproduction. At the same time the viability of the residential construction sector, with its non-mechanized conditions of production, necessitates that housing is relatively expensive. Stone calls this the income-cost contradiction.

> The problem of incomes and housing costs cannot be solved within capitalism because the required distribution of income would lead to the collapse of the labor market, while the required reduction of housing costs would lead to the collapse of the private housing market. Yet the problem cannot be ignored, because inadequate incomes undermine the profitability of the housing market, high housing costs add to the wage costs of employers, and this squeeze is a potential source of political disruption.[65]

The successes and failures of housing policy in the nineteenth and twentieth centuries are seen as an attempt to manage this insoluble contradiction in the interests of capital. However, Stone argues that this attempt has not only failed to resolve the basic conflict between the housing market and the labor market, but has created further and more serious problems. The specific attempts to expand

and stabilize the production and demand for housing through the extension of debt has helped destabilize the financial structure of the nation itself. As a result Stone views housing as both a cause and victim of an even more profound debt crisis. Moreover, the political consequences of the economy's increasing sensitivity to the ability and willingness to repay housing debt further undermine the system's stability.[66]

This theoretical position is applied to several stages in the history of American housing development. The housing boom of the 1880's is attributed to the provision of tenement housing for immigrants in the large eastern cities. However, the conditions became depressed in the 1890's. The low wages of the tenement dwellers did not provide the effective demand for continued profitability, and housing investment did not yield a sufficient enough return for self-sustaining finance. The housing boom collapsed due to the conditions in the housing industry caused by the income-cost contradiction. The depressed situation in housing exacerbated the generalized depression of the 1890's and thereby further destabilized the economy as a whole.[67]

The money capital needed to revitalize housing construction would re-appear with the rise of financial institutions and the appearance of debt-financed suburbanization. Several factors combined to provide the impetus for the exodus from the decaying central cities, for those who could afford it, in the late nineteenth and early

twentieth centuries. The first reason stems from the rationalization of the capitalist labor process itself. The implementation of the various schemes of management control entailed the rise of a middle-class "salariat" whose compensation was well above basic subsistence. These management salaries provided the basis of down payments for housing as well as the source of liquid funds, to be invested in housing, in the form of savings deposits. These deposits ballooned from $425 million in 1867 to $52 billion by 1929.[68]

Suburbanization was also facilitated by the extension of transportation networks. The 1890's witnessed the continuation of the urban rail lines to the outlying areas. In fact, the peripheral communities of Boston were known as "Streetcar Suburbs." The settlements of the 1880's and 1890's were primarily "bedroom communities," whose residents retained jobs in the older central city.[69] In addition the automobile boom of the 1920's contributed to the suburban exodus. Passenger car registrations increased from eight million to twenty-three million during the decade. On the eve of the great depression suburbs were growing at twice the rate of the central city.[70]

In addition housing was needed for those workers following the movement of industry to the outlying districts of the major metropolitan areas. The development of electrical power partially freed factory production, and the need for sprawling assembly-line factories sent owners seeking cheaper land in the suburbs. Industrial employment

in twelve of the thirteen largest industrial areas increased more than 100 percent faster in outlying districts than in the central city in the ten years from 1899-1909.[71]

However, sources of transportation and industry location do not provide sufficient explanation for the early twentieth century housing boom. In the first place the timing of the extension of transportation networks and the cycles of housing production are out of phase. For example, the automobile boom continued until the collapse of the stock market in 1929, while housing starts peaked in 1925. Secondly, this explanation does not consider the role of effective demand, or the financial ability to purchase suburban housing. Stone attributes the housing boom of this period to the increase in debt-based financing as well as the build-up of savings deposits, especially in the decade of the 1920's. Mortgage debt had jumped from $3 billion to $7.5 billion from the turn of the century until 1918. By 1930 it had increased by 400 percent, and stood at the $30 billion level. However, the system of debt-financial housing collapsed during the depression of the 1930's. The system was structured on the basis of high down payments and short term loans. Banks traditionally financed only fifty percent of the house's value for five year periods, during which the debtor paid only the interest. At the end of this period the morgage was renegotiated. While the system functioned adequately for those whose income was sufficient to meet the downpayment requirements during the prosperous

years of the early 1900's, it broke down during the financial collapse of 1929. Unemployed homeowners could not meet even the interest payments and banks, unable to renegotiate due to lack of funds, foreclosed on nearly ten percent of all owner-occupied housing in the mid-1930's.[72]

The rescue of the residential construction industry would entail a major transformation of the mortgage finance system and substantial build-up of savings deposits. This, in turn, required an expanded role of the government.

Effective State Participation

A historical literature on the role of the state in the aid of American private enterprise long antedates this study on housing. One line of historical reasoning, known as the Beard-Hacker thesis, holds that the Civil War served as a second American revolution. During this period the political representatives of the industrial capitalists seized control of the state apparatus from the mercantile interests of the Southern slavelords. Charles and Mary Beard have argued that control of the state allowed the erection of an infrustructure needed for the success of industrial capitalism. When the Federal government was in the control of the representatives of the Southern planter-capitalists, these measures were consistently precluded. However, upon secession the Republican Party was able to pass a series of statutes amenable to capital accumulation in a Congress bereft of Southern representation. A high protective tariff, repealed by the Democratic Party, was

restored to protect industrial markets. Moreover a measure taxing the states to provide internal improvements, especially those in transportation, and the salvation of the union itself extended that protected market to historically unprecedented dimensions. The Republican-dominated Congress also provided the foundation of a stable currency by the re-establishment of a national banking system, to take the place of the one abolished in 1836 by Andrew Jackson's veto. In 1864 an immigration act was passed which served as the statutory basis for the augmentation of the labor supply. This was especially needed in light of the earlier 1862 Homestead Act, which had the potential for depleting the reserves of labor. While this Act was partially attributable to the need to tie the political interests of the West to Northeastern Capital, conditions of capital accumulation were fostered as well. Expansive tracts of land offered at inexpensive prices extended markets, production and the domain of the railroad.[73]

These structural changes, developed by the state in the course and aftermath of the American Civil War, allowed private accumulation to flourish. In addition to the subsidization of private enterprise and a public lands policy which distributed nearly ten percent of the remaining public lands to the contractors of the transcontinental railroad, legal interpretations of the Fourteenth Amendment further protected American industry. By 1886 corporations were defined as legal persons and attempts to limit

corporate largesse by the legislatures of the individual states were interpreted a procedural violation of due process.[74] The era in which the representatives of the South held political power was one in which the aspirations of the industrial capitalists were stifled and restricted to circumscribed regions. The Civil War marked a turning point as those restrictions were transcended and American industrial capitalism waxed triumphant.

> The American Civil War turned out to be a revolution indeed. But its striking achievement was the triumph of industrial capitalism. The industrial capitalists, through their political spokesmen, the Republicans, had succeeded in capturing the state and using it as an instrument to strengthen their economic position. It was no accident, therefore, that while the war was waged on the field and through Negro emancipation, in Congress' halls the victory was made secure by the passage of tariff, banking, public-land, railroad, and contract labor legislation.[75]

State participation in the residential construction industry was accentuated with the coming of the New Deal in the Great Depression of the 1930's. The early years of the Depression saw little government subsidization of the housing industry despite the near doubling of mortgage foreclosures from 1929 to 1932. President Herbert Hoover was convinced that the roots of the depression were monetary, and caused by an "easy-money" policy. He was therefore reluctant to bail out the housing sector with a large injection of credit. However, the collapse of major

European banks and the resulting withdrawal of deposits from the American economy forced the hand of the recalcitrant Hoover. Towards the end of his administration, Congress passed an act which created the Federal Home Loan Bank Board (FHLB). The bank was designed to purchase mortgages from thrifts and commercial banks, and predicated on the theory that such a source of liquidity would serve as an incentive for the granting of new loans.[76] The new agency was less than successful. Foreclosures continued to escalate, climbing from 248,000 in 1932 to 252,400 in 1933.

However, the change in Presidential administrations and the coming of the New Deal ushered in a more activist housing policy, albeit one more designed to "save capitalism" than to provide shelter for the homeless and employment for building trades workers. The provision of public housing was minimal during the administration of Franklin D. Roosevelt and has continued on these lines since. By 1975 publically-owned dwelling units comprised a mere 2.12 percent of the total housing stock.[77]

Instead of directly competing with the private construction and real estate interests, the federal strategy to ameliorate the ravages of the Great Depression upon the housing industry was to extend and amend the system of mortgage finance. The Roosevelt administration's first attempt at housing policy was the establishment of the Home Owner's Loan Corporation (HOLC) in 1933.

The HOLC issued federally guaranteed bonds in exchange for the defaulted mortgages (at first only the interest payments were guaranteed but during 1934 the principal was included). This increased the liquidity of the banks and shifted the burden of mortgage default to the Federal Government.. The HOLC also aided the homeowner directly. First it granted cash loans for the payment of deliquent taxes and for property improvement. But more importantly it changed the nature of mortgage financing. Delinquent mortgages were refinanced by the HOLC at lower rates of interest and over a longer (15 year) period of time. These loans were also amortized - that is both principal and interest were to be retired with monthly payments. The HOLC financed about $3 million worth of loans until its refinancing operations ceased in 1937. Only one-fifth of the HOLC mortgages were foreclosed.

The HOLC was more successful than the predecessor, the FHLB. Total foreclosures fell every year from 1933 to 1948. However, since the HOLC was mandated to retire and renegotiate only defaulted mortgages, the direct effect on the mortgage market as a whole was limited. Given the unemployment rate of 24.9%, the income side of the income/cost contradiction precluded anything but a collapse in new lending.

On the other hand the indirect effects of the HOLC, the long-term amortized mortgage, were tremendous. In 1934 the United States Congress passed an epic Housing Act. One of the main purposes of this Act was to create a healthy

mortgage market and reduce risks to banks by extending the long term amortized mortgage throughout the system on a permanent basis.[78]

This permanence became operationalized with the establishment of the Federal Housing Administration (FHA.) The purpose of the FHA was to correct the deficiencies of the previous system of mortgage finance and stabilize future mortgage lending. The functions of the FHA were augmented in 1944 by the Veteran's Administration. These agencies sought to deepen the lender base by reducing risk. The FHA insured mortgages against default, while the VA guaranteed payment by the Federal Government should the veteran homeowner default. Despite the reduction of risk made possible by the government's action, the private sector banking community remained skeptical of the new system of mortgage finance.

Bankers had reason to be cautious, given the profit motive. Personal savings, excluding consumer durables, had fallen from the 1929 peak of $9.16 billion to a negative $2.06 billion in 1933. Although the figure turned positive in 1935 ($.18 billion), levels remained below the 1929 figure until the United States became involved in World War II. The pre-war high level of personal savings equalled only $4.39 billion. Combined time deposits in commercial banks and Savings and Loan Associations fell from $25.96 billion in 1929 to $17.1 billion in 1934 and remained below $20 billion throughout the remainder of the decade.[79]

Given their declining influx of deposits and low liquidity position, banks and thrifts were unwilling to enter into long term loans with low fixed interest rates even if those loans were insured against loss by the agencies of the Federal government. Even with the reduction in risk, the possibility of holding a long term, illiquid asset with a low yield served as a negative incentive for the banks.

The measure to countervene these fears of bankers was the establishment of the secondary mortgage market. In 1938 the Federal National Mortgage Association (FNMA), better known as "Fannie Mae" was chartered to operate a resale market in FHA and VA mortgages. It was intended to stabilize the market by increasing the liquidity of home loans and injecting new sources of funds into the housing sector. In addition the FNMA's national scope of operation was to correct regional imbalances. These actions were designed to reduce the volatility of mortgage rates over the course of the business cycle. Like the Federal Reserve system, the FNMA was chartered to be a "buyer of last resort."[80]

The participation of the government in housing finance was further extended by the creation of the Government National Mortgage Association (GNMA), or "Ginnie Mae," in 1968. The chartering of the GNMA was part of a major restructuring of the secondary market that occurred with the passage of the Housing and Urban Development Act. The FNMA

was rechartered as a private corporation, and the GNMA was empowered to create a new financial instrument: the mortgage bond.

> The basic idea behind the mortgage backed security program is simply to convert a mortgage, for reasons mentioned earlier, an asset with limited appeal to many potential investors, into an instrument with widespread appeal and ready marketability. Ginnie Mae accomplishes this feat by guaranteeing the payment of principal and interest on securities issued by primary lenders, predominantly mortgage bankers, where a pool of FHA and VA mortgages serves as the collateral behind the issue.[81]

In 1970 the subsidizing activities of the secondary market were extended to the private sector of conventional (or non-VA, non-FHA) mortgages, with the creation of the Federal Home Loan Mortgage Corporation (FHLMC), or "Freddie Mac." Legislators reasoned that the extension of the techniques developed in the government-backed primary sector were crucial to the overall liquidity of the mortgage finance system, as more than 75 percent of mortgages were conventionally financed by 1975.[82] Despite some forty years of participation in the mortgage market, stabilization of housing production has not been achieved, even with the massive transfer of liquidity into mortgage banking. Rather than being an utter failure, the subsidization of mortgage banking and the housing industry had an uneven cyclical impact. The period from 1946 to 1965 saw an expansion of the housing stock by more than twenty-nine million units. However, this growth was accompanied by a massive increase

in debt, generated in both the primary market and the government-subsidized secondary market. Residential mortgage debt increased by more than 750 percent during this period. According to Michael Stone (1980) the growing debt of the American economy in general, and the housing sector in particular, exposed four fundamental weakness of the new mortgage system. Since residential debt grew at a faster rate than the economy as a whole, housing debt grew faster than the ability to repay it. Secondly, the new system of finance tied both the production of new housing and the ability to purchase it to the credit cycle, while was itself unstable. This led to an increase in housing-start fluctuations and not greater stability.

> Although the business cycle was relatively mild for two decades after World War II, housing production fell an average of 30 percent during each of the major periods of restricted mortgage credit that occurred prior to the mid-sixties.[83]

The increased instability of housing cycles, in conjunction with the increase in debt contracted for housing, exposed the third weakness of the new system. Financial institutions which have traditionally centered their activity in housing loans are themselves rendered more vulnerable. The thrifts which dominate this sector have assets based in long-term, fixed-rate mortgages, and must obtain funds via deposits or open market borrowing. Prior to 1980 interest paid on savings was limited by Regulation

Q. If market interest rates were to rise significantly above this limit the process of disintermediation becomes a threat to the very solvency of the institution.

Finally, the increasing sensitivity of the system to the cost and availability of credit creates a potential problem for the institution of homeownership. As building and credit costs increase, the "American Dream" of homeownership, and its conservatizing effects, become a viable option for fewer and fewer people. This exacerbation of the income-cost contradiction threatens the ideological basis of the society itself.[84]

These contradictions came to the fore in the 1970's. As American political and economic hegemony waned and social movements demanded increased expenditures for social programs, pressures on both the Federal budget and the credit markets increased. Government borrowing to finance the growing deficits, and corporate debt to fund mergers, added to the immense bubble of housing debt accumulated during the 1960's. This exposed the fundamental contradiction of debt-financing. On the one hand, the government serves as a lender of last resort and supplies the needed liquidity. This however can serve as a component in the general increase in prices, which pushes up the cost of housing itself. On the other hand, the government can restrict the growth of credit. This strategy can result in growing bankruptcies and increased credit cost. Stone asserts that the policy since the late 1960's has "swung

more and more violently between the poles of this contradiction.[84] Consequently, the system designed to produce stability in the era of low interest rates, low housing prices, and American political hegemony was a prime cause of instablity in the age of high interest rates, $100,000 homes, and the decline of the American empire. Housing starts dropped from 2.3785 million in 1972 to 1.1714 million in 1975. When a boom did reappear in 1977 it was fueled largely by speculation. Ownership costs of housing increased by 40 percent between 1976 and 1978 alone, while median family income increased by a mere 16 percent. Not only was the income-cost contradiction exacerbated by this increase, but the 40 percent increase in sales, despite the cost escalation, further pressured the potential conflict between the extension of debt and the ability to repay. Fueled by rising interest rates, this contradiction asserted itself as the speculative bubble burst.[85] By 1982 housing starts had fallen from a 1978 cyclical peak of 2.0361 million to 1.0721 million.[86]

Citing the change in attitudes of housing consumers from those of shelter to those of inflation-hedging speculation, Brookings Institution liberals such as Anthony Downs (1980) were advocating a reduction in the subsidies directed towards housing, as well as the curtailment of the tax advantages of homeownership.[87] While the viability of the nation's "fragile" financial structure and the solvency of the major banks may be "saved" by such a measure, it would do little to stabilize construction of housing.

Although the Federal Government has injected vast amounts of liquidity into the housing sector, via the primary and secondary mortgage market, it has not done much to directly subsidize technological change. The two major attempts to do so resulted in failure. The first such attempt was proposed by the Kennedy Administration. In January 1962, in their Annual Report, the Council of Economic Advisors (CEA) recommended the creation of the post of Assistant Secretary of Commerce for Science and Technology for the specific task of "extending research benefits to industries that lacked a research tradition". The CEA also recommended Federal support to direct the "offspring of military research" towards the civilian sector. Construction was to be one of the targeted industries. In May of 1962, J. Herbert Holloman was appointed to the post and requested funding for the Civilian Industrial Technology Program to accomplish these goals.

The CITP never really got off the ground in the construction industry due largely to opposition within the industry itself. The American Society of Construction Engineers was opposed on the grounds of government interference in the free market. Building Trades' unions felt their jobs and jurisdictions were threatened by technological innovation that already existed, and they did not want the Federal government aiding in the process. Builders associations opposed the plan on the grounds that they were not consulted in formulating the policy. They

argued that direct government subsidization of R&D would upset the competitive balance of the industry. Industry spokesmen argued that there "was already a building research program in the industry, though it was somewhat hidden owing to competitive relationships that led to secrecy on matters of innovation". Those innovators did not want to give up their competitive edge to the federal government.[88]

A similar fate befell "Operation Breakthrough," a 1969 project of the Nixon administration. This program was designed to develop the conditions of large volume production of housing. Included in the original plan were methods to improve materials design, factory construction techniques and the encouragement of pre-fabrication, as well as better management and marketing strategies. In addition "Operation Breakthrough" was designed to assure the mass markets for the increased volume of factory-produced housing.[89] The program was placed under the direction of HUD Secretary George Romney. Only 25,000 "test" houses were built under the auspices of this program, whose goal was to encourage yearly volume production. No volume run was ever completed when Nixon imposed a mortatorium on additional construction in 1973. Quigley (1982) attributes the failure to Romney's desire to attract capital from other, more technologically developed, industries. This was to be at the expense of the traditional network of builders who once again, opposed the program.[90]

The results of this cyclical instability and unevenly developed pattern of subsidization tend to preserve an

industrial structure of small firms, with a low level of capitalization. Rather than investing heavily in technology, suitable only for large volume production, housebuilders eschew this strategy for one more flexible in times of cyclical instability. In a microeconomic analysis of the relation between business organization and economic fluctuations, Manski and Rosen (1978) stress the need for flexibility. Faced with unstable demand for their product, firms will opt for a more generalized, "reasonably" efficient, technology and a labor-intensive production process than those producing in a more stable market would find optimal.[91]

Summary

One should expect to find a labor process governed by the principles of the formal subordination of labor to capital in the residential construction sector, due to the lack of development of the above-mentioned pre-conditions. Although some designs are standardized, this process has not been developed to the extent of interchangeability of parts. Even carpenters producing standardized units must still engage in a substantial amount of "fitting". Buildings must be erected plumb and level, and wood is an imperfect material that often necessitates subtle adjustments.

Homes are generally immobile structures built in a narrow regional or local market. If this is the case then the extensive market upon which mass production industry

flourished, is missing. As a consequence these markets will not support the volume of sales needed to make mass production cost effective. The inability of Romney's Department of Housing and Urban Development to implemenmt strategies of mass marketing seems as viable an explanation for the demise of "Operation Breakthrough" as the recalcitrance of the traditional builders. If the demand is unstable, as well as geographically circumscribed, then the incentive to invest in costly mass production equipment is further missing. If this equipment should lay idle during a frequent downturn, then the risk of business failure could outweigh potential economies of scale.

The housing industry has been such a historically unstable industry. Not only has the government's strategy of mortgage finance failed to stabilize the fluctuations in demand, the contradictions of debt financing have, indeed, exacerbated the problem. Housing cycles are now shorter and the financial system as a whole is more vulnerable. Erratic monetary policies of credit crunches followed by injections of liquidity have given rise to periods of rampant speculation succeeded by prolonged slumps.

The literature of demand stability has been cast within the context of the concentrated and centralized firm. Given this historic instability one should expect the housing industry to be characterized by a significant number of small firms. The lack of command over monetary resources further reinforces the disincentives towards inflexible, mass production equipment.

I stress that it is the interaction of these conditions which determines the structural conditions for the feasibility of mass production and the real subordination of labor to capital, not their individual effects. For example, automobile production is cyclically unstable yet it is also a bastion of inflexible mass-production equipment and technical control. However, if these conditions, taken together, mitigate the development of mass production and mass marketing, then one should not expect the capitalist control of the labor process upon which the real subordination of labor to capital rests. Instead workers who are able to think and adapt to new situations, who can work independently, and control a more flexible technology will remain the norm for the housing industry. It is these ideas which will be empirically tested in the next three chapters.

Chapter Notes

1. Chandler (1977) p. 240.
2. Chanlder (1977) p. 241.
3. Mandel (1978) pp. 26-28.
4. Chandler (1977) pp. 240-242.
5. Chandler (1977) pp. 55-56.
6. Rosenberg (1972) p. 90.
7. Rosenberg (1972) pp. 91-92.
8. Rosenberg (1972) p. 95.
9. Chandler (1977) pp. 73-74.
10. Chandler (1977) pp. 76-77, and Rosenberg (1972) pp. 95-96.
11. The exact inventor of this method is not clear. Bob Reckman attributes it to Augustin Deodat Taylor, a Connecticut itinerant. Architectural historican Sigfried Giedion claims the inventor is George W. Snow of Keene, New Hampshire. Evidently both wound up in Chicago in 1833, and the technique is also known as Chicago framing.

    The name balloon frame was derogatory. Carpenters steeped in post and beam construction felt it was so light that it would "float away like a balloon."
12. Woods (1979) p. 73.
13. Petulla (1977) p. 41-42.
14. Reckman (1979) p. 80.
15. Giedion (1959) p. 202.
16. Giedion (1959) p. 201.
17. Reckman (1979) pp. 81-82.
18. Christie (1956) pp. 26-27.
19. Smith (1976) pp. 17-21.
20. Piore and Sabel (1984) p. 23.

21. Chandler (1977) p. 245.

22. Chandler (1977) pp. 82-83.

23. Chandler (1977) pp. 213-214.

24. Chandler (1977) pp. 120-121.

25. Chandler (1977) p. 285.

26. Chandler (1977) p. 286.

27. Taylor (1977) p. 251.

28. Christie (1956) pp. 21-28.

29. Harvey (1984) p. 373.

30. Ashton (1984) p. 65.

31. Harvey (1984) p. 383.

32. Ashton (1984) p. 70.

33. The construction of a standardized housing tract in Daly City, California inspired the songwriter Malvina Reynolds to pen:

Little boxes on a hillside,
Little boxes made of ticky-tacky,
Little boxes on a hillside,
Little boxes all the same.

Quoted in Rice (1979). In addition to commenting on the physical appearance of tract housing, Reynolds' song critiques the sameness of suburban life. Housing analyst Kay Stewart (1979) p. 475, also critiques the effects of standardization, done in the name of economy, upon the psychological needs of the suburban family.

34. Maisel (1953) p. 114.

35. Baran and Sweezy (1965) p. 27.

36. Machlup (1967) p. 18.

37. Edwards et al (1975) p. XV.

38. Baran and Sweezy (1965) pp. 126-127.

39. Piore and Sabel (1984) p. 49.

40. Edwards (1975) p. 5.

41. Gordon, et. al. (1982) p. 172 and Edwards (1979) pp. 86-97.

42. Gordon et. al. (1982) p. 180.

43. Doeringer and Piore (1971) pp. 29-30.

44. Buraway (1979) pp. 104-107.

45. Braverman (1974) p. 127.

46. Actually Burns claims that long cycles are the result of the characteristics of dwellings and men. However, women also inhabit these dwellings, and I see no particular reason to exclude them just to remain "true" to the (sexist) language of the author.

47. Burns (1955) pp. 67-69.

48. Burns (1955) p. 74.

49. Burns (1955) pp. 73-74.

50. Burns (1955) pp. 96-97.

51. Long (1940) pp. 3-11.

52. Long (1940) pp. 108.

53. Hansen (1941) pp. 20-24.

54. Christie (1955) p. 271.

55. Hansen (1941) p. 22.

56. Hansen (1964) pp. 404-405.

57. Long (1940) pp. 110-111.

58. Guttentag (1961) p. 280.

59. Guttentag (1961) pp. 285-286.

60. Berkman (1979) p. 54.

61. Berkman (1979)p. 60.

62. Berkman (1979) pp. 285-286.

63. Berkman (1979) pp. 72-73.

64. M. Stone (1980) p. 67.

65. M. Stone (1980) p. 68.

66. M. Stone (1980) pp. 68-69.

67. M. Stone (1980) pp. 78-79.

68. M. Stone (1980) p. 80.

69. Warner (1978) p. 43.

70. Baran and Sweezy (1965) pp. 302-303 and Ashton (1978) p. 72.

71. Ashton (1978) p. 71.

72. M. Stone (1980) pp. 83-85.

73. Beard (1937) pp. 105-107.

74. Hacker (1940) pp. 387-389.

75. Hacker (1940) p. 373.

76. Fish (1979) pp. 178-185.

77. Fish (1979) p. 220.

78. Beyer (1958) p. 240.

79. Berkman (1979) pp. 66-67.

80. Berkman (1979) pp. 67-68.

81. Berkman (1979) p. 68.

82. Berkman (1979) pp. 69-70.

83. M. Stone (1980) p. 91.

84. M. Stone (1980) p. 94.

85. M. Stone (1980) pp. 93-96.

86. Business Statistics p. 34.

87. Downs (1980) pp. 1-5.

88. Nelkin (1971) pp. 30-31, 64-75.

89. Rice (1979) p. 361.

90. Quigley (1982) pp. 393-398.

91. Manski and Rosen (1978) pp. 206-207.

CHAPTER IV

METHODOLOGY

The purpose of this dissertation is to determine the existence and degree of the subordination of labor to capital in the residential construction sector of Southeastern New Hampshire. The primary focus, among the myriad of trades involved in housebuilding, will be upon carpentry. I also wish to analyze the possibility of differing types of control or deskilling, within the theoretical context of the subordination of labor to capital. Finally, I wish to find evidence concerning the existence or non-existence of organized resistance by residential carpenters to the technological and organizational directives of building contractors. This should provide the basis for developing the important link between the nature of the labor process and the conditions of capital accumulation.

Methods of Verification

I will conduct an empirical case study to collect primary data and test for three propositions. In Chapter V, I will test to determine whether the Southeastern New Hampshire residential construction sector was organized under the principles of the formal or real subordination of

labor to capital, as of 1983. Prior research has shown that the formal subordination itself is a transition stage, exhibiting characteristics of both earlier handicraft organization as well as specifically capitalist production. In Chapter VI, I will test for the existence of such transitional degrees of evolution in Southeastern New Hampshire housebuilding. In Chapter VII, I will attempt to determine whether there is a link between the degree of observed class struggle and the nature of the labor process itself. To accomplish these goals I will conduct empirical research regarding the pre-conditions for the existence of the real subordination of labor to capital. Chapters V-VII will present data concerning the standardization of product and process, as well as market extensiveness. Moreover, these chapters will also contain data on the nature of control found within the trade of carpentry and attempt to tie the development of methods of control to the degree of the subordination of labor to capital.

Collection and Interpretation of Data

The case-study employs the use of a two-part, open-ended questionnaire (or more precisely, interview guide), to be administered to twenty housebuilding contractors and twenty carpenters. While the open-ended questions are more difficult to quantify, a greater richness of data is expected. Rather than providing those actively engaged in building with a pre-conceived set of answers, they were

asked to describe their building experiences in their own words. I expect to capture more of the subtle complexities of the process of housebuilding if I don't appear to have all the answers about what they do on a regular basis.

However, I do possess more than a passing academic interest in the building trades, having worked in many phases of carpentry prior to the collection of data for this dissertation. I was raised in a family of woodworkers, my father and paternal grandfather were accomplished craftsmen in addition to being building contractors. As a youth, I was employed by my father on large commercial jobsites. I also contracted small jobs with a partner in Southern California until 1975. From 1975-1977 I worked as a cabinet-maker in New York, and during this period I acquired the knowledge of complex joinery that would render me a "skilled" woodworker. From 1980-1984 I worked as a framer and finish carpenter in Southeastern New Hampshire, the area of this study. Many of the questions appearing on the interview guide resulted from actual jobsite conditions I had encounted. Moreover, the experience of working in New Hampshire pointed out the vast regional differences of construction techniques and work relations. Finally, working in the area of my survey exposed me to contacts in the housing industry that may not have been accessible to a complete "outsider."

Contractor Questions

Contractors were divided into three categories, depending upon their volume of single and multifamily dwelling construction in 1983. This methodology was employed by Sherman Maisel in his 1953 study of the San Francisco Bay area, entitled **Housebuilding In Transition.** Maisel found the most satisfactory method of categorizing builders to be that of size. Large builders were defined as producing more than one hundred houses per year. Medium builders were classified as having an annual volume of between twenty-five and ninety-nine units in 1949, the year of his study. Small builders were further subdivided into two categories: those producing less than ten houses per year, and those in the range of eleven to twenty-four yearly units. The rationale for this classification scheme was two-fold. In the first instance the annual volume of output was closely correlated with other defining characteristics of market structure location such as assets and dollar volume of sale. Secondly, and more importantly in terms of this study, Maisel established that significant changes in management structure, marketing, and job-site organization occur with the shift in size categories.

> It is necessarily somewhat arbitrary to draw a sharp line between these groups. The transition in type of organization is gradual. In some cases, firms close to each other in size but placed in separate statistical classes by our arbitrary division, may actually be more alike in type of organization than are

> firms lying at the far extremes within a given class. Certain kinds of overlap cannot be avoided. The important point is that when firms are divided according to the number of completions, there occur significant differences between classes which are more meaningful than the differences existing within a class.[1]

The only significant adjustment of Maisel's method in this dissertation is the extension of the category of the medium builder to include those who build between eleven and ninety-nine houses per year. In Chapter VI, I will attempt to determine whether or not significant variations occur in the organizational structure of builders based upon these newly defined categories.

A selective sample of housebuilding contractors in Southeastern New Hampshire, operating in Rockingham, Hillsborough, and the southern sections of Merrimack and Strafford counties, was taken in order to insure representation of all size classifications of builders. The majority of possible choices came from the 1982 listing of the Homebuilders of New Hampshire, the state chapter of the National Association of Homebuilders (NAHB). This list was obtained from a Rockingham County housebuilder on the advice of the director of the New Hampshire Homebuilders Association (NHHA). In addition to the NAHB list, informal methods were used to collect data on small builders. The membership roles of the NAHB underrepresents the small builder. According to the state director the dues structure serves as a deterrent to all but the well-established low

volume builder. Only two of the five small builders surveyed in this study were members of the NHHA. Interviews with additional small builders were obtained from others previously surveyed, as well a by personally stopping by job-sites in the process of construction to arrange an interview with the contractor.

The sample collected for this dissertation overrepresents the large builder in New Hampshire. In 1983, only two residential construction companies in that state built more than one hundred units, and both are included in the survey. It was felt that the need to compare the operations of a least two large builders outweighed the potential bias introduced by such an overrepresentation of the high volume housing contractor.

Data were collected over a four-year period, from 1982-1986. All were reconciled to output levels, work organization, and business conditions for 1983. I used in-person interviews to obtain responses from the contractors. While I felt a majority of the contractors on the NAHB list would probably turn down my requests, in-person interviews were considered the optimal technique. The data were collected in the summer months which is the "busy season" in housebuilding. It was felt that a lengthy mail questionnaire would simply not be answered by a heavily occupied housebuilder. All contractors were guaranteed anonymity. Therefore construction firms will be identified

by the town or city of their base of operations, rather than by company name.

The questions on the interview guide were pre-tested in 1981. In the late spring, a preliminary set of questions was administered to a small contractor, who was also a former employer of mine. Questions which were difficult or impossible to answer, as well as those which seemed trivial to this contractor, were removed or rewritten. In the summer months the revised set of questions was pre-tested again among five contractors in San Diego, California. One of these contractors was classified as small, one as medium, with three companies building in excess of one-hundred homes per year. The second pre-test was considered necessary to avoid the bias of gearing the set of questions solely to the small contractor.

The interview guide for contractors is divided into five basic sections. The general information section seeks to determine the volume of output, in order to classify the builder, as well as ascertaining the extent of building operations and types of dwellings constructed. The second, and longest, section concerns the organization of work. Questions in this area focus upon the degree of the technical division of labor, the nature of supervision, the extent of management control and work rules, and reactions of carpenters to the directives of contractors. Also included in this section are questions concerning the location of the builders' offices, size of office staff, and extent of operations done in the front office.

Part three asks questions concerning tools and mechanization. In this section questions are raised concerning the ownership of tools and equipment, in addition to those concerning the types of machinery used and the extent and implications of pre-fabricated component usage. A fourth section introduces queries concerning the skill levels of carpenters. Included in this topic area are questions asking for the contractor's definition of skill, the percentage of skilled labor employed, and the possible use of incentives to change the skill composition of the labor force. The fifth and final part of the interview guide attempts to determine the degree of concentration among Southeastern New Hampshire housebuilders. Questions are asked concerning both horizontal and vertical integration. (See Appendix A for the interview guide).

Carpenter Questions

Twenty carpenters were also selectively sampled in this survey. Names of carpenters were obtained from several sources. The primary method was to acquire names of carpenters from the contractors they worked for. This was designed to insure a sample of carpenters working for all three size classifications of builders. In addition, it was felt that reference to the employer would make interviews easier to obtain. The potential sample size was also increased by references given by the carpenters already interviewed. Data on carpenters were also collected over

the period 1982-1986. Like the contractors, all carpenters interviewed were guaranteed anonymity. Carpenter responses, however, were collected by means of telephone interviews. These were less extensive than those of the contractors, as these interviews do not contain questions concerning location in the market structure, office operations, or the degree of horizontal and vertical integration.

The interview guide for carpenters is divided into five sections. Questions in the first section are designed to determine the employer, as well as the type of residential construction the carpenter most frequently engages in. The second part seeks to ascertain the type of supervision the carpenter works under, and the degree of dependence or independence he experiences on the job. The third section of the interview guide asks carpenters to define the nature of skill, and whether or not they consider themselves skilled by their own definition. Also included in this portion are questions addressing the development of the technical division of labor.

Part four focuses on the ownership of tools and machinery in order to test for actual ownership as well as feelings on ownership of tools among carpenters. Also addressed in this segment are the use and potential effects of pre-fabricated component installation. The final section is designed to test for the existence of employer-employee conflict on the job. The concept of the exit-voice tradeoff, developed by Richard freeman and James Medoff,[2] is

utilized to determine if any observed turnover is the result of a casual labor market or unresolvable conflict between carpenters and contractors. In addition, carpenters are questioned as to whether their present status includes independent contracting, as well a to their future plans. (See Appendix A for the carpenter interview guide.)

Summary and Intent

The empirical chapters of this dissertation are designed to test for the degree of the subordination of labor to capital. Is contemporary Southeastern New Hampshire residential carpentry organized under the formal subordination of labor to capital? If so, one should expect to find a relationship of wage labor and capital, but not full control of the labor process on the part of the contractors. One might expect to find the continued use of skilled labor, incentives to increase skill, informal supervision, and a choice of technology which is not inherently deskilling. On the other hand, the existence of the real subordination of labor to capital would be accompanied by substantial contractor control of the labor process embodied in deskilling technologies and work organizations. Moreover, I wish to gain insights into the degree of resistance and/or consent of carpenters to the directives of building contractors and their managers. This will be tested by a comparison of carpenter and contractor data on turnover with the information gathered on the nature

of the labor process and the degree of independence among carpenters.

Chapter Notes

1. Maisel (1953) p. 22.
2. Freeman and Medoff (1984) pp. 94-110.

CHAPTER V

THE SUBORDINATION OF LABOR TO CAPITAL

Introduction

In this chapter I will test the first of three hypotheses on the organization of work found in housebuilding, with an emphasis on the trade of carpentry. The first hypothesis asserts that the formal subordination of labor to capital is the prevailing mode of organization. Results of interviews with both carpenters and contractors in Southeastern New Hampshire will be presented in tabular form to substantiate the conditions of the degree of subordination of labor to capital.

Conditions for the Formal Subordination of Labor to Capital

Housebuilding in southeastern New Hampshire exhibits the basic characteristics of the formal subordination of labor to capital. These conditions, as analyzed in detail in Chapter II, should show that New Hampshire housebuilders:

1) employ "collective labor;"
2) have legal and monetary control over those they employ;

3) are relatively small capitalists when compared with either the major firms in the manufacturing sector, or the national giants in housebuilding;

4) utilize an untransformed labor process (one which exhibits substantial skill on the part of the workforce in both conception and execution, and a low degree of automatic machinery; as a consequence of these two features, the control asserted by the owner is informal and personal).

The above characteristics of the formal subordination of labor to capital will now be developed in greater detail and counterposed with the responses of the twenty building contractors.

1. Employment of Collective Labor.

Collective labor, by definition, is the employment of a relatively large number of workers by an individual capital. The historical difference between this early stage of capitalist production and the earlier handicraft mode of production was, for Marx, purely quantitative. It was merely an enlargement of the workshop of the guild masters. Moreover, any individual skill and knowledge not possessed by the individual worker is embodied in the collective labor. The construction companies surveyed in this dissertation employ collective labor in two ways: by either

directly employing their own workers, or sub-contracting some or all phases of the total process of housebuilding.

Of the twenty contractors surveyed, 14 reported directly hiring their own carpentry crews. Crew size ranged from a low of 2 carpenters (excluding the owner) to a maximum of 40. These responses are arrayed in Table V-1. Eleven of the builders also directly employed non-carpentry specialty trades. Allowing for multiple responses, these specialty trades were clustered into three main categories: unskilled labor; excavator/heavy equipment operator; and painter. Seven builders employed laborers, and four directly hired painters. Other responses are arrayed in Table V-2.

TABLE V-1
CARPENTERS EMPLOYED ON A FULL-TIME BASIS

Number	Small	Medium	Large	Totals
0	0	6	0	6
1-5	4	3	0	7
6-10	1	2	0	3
11-15	0	0	1	1
21-25	0	0	0	0
26-30	0	0	1	1
31-35	0	0	0	0
36-40	0	1	0	1
> 40	0	0	0	0

TABLE V-2
SPECIALTY TRADES EMPLOYED IN-HOUSE

Trade	Small	Medium	Large	Totals
None	4	5	0	9
Painters	1	2	1	4
Excavators/Heavy equipment operators	0	2	1	3
Truck drivers	0	1	1	2
Mechanics	0	1	0	1
Plumbers	0	1	0	1
Laborers	0	5	2	7

Such employment, in and of itself, is not sufficient to establish the existence of collective labor. Only four builders responded that they employed more than ten workers, which can hardly be construed as even a "relatively" large number of workers. In fact, six of the building contractors surveyed employed no carpenters at all. The primary method of labor organization in New Hampshire housebuilding is the employment of various specialty trades via sub-contracting. Carpenters, acting alone, would find it extremely difficult, if not impossible, to construct a house on-site in the 1980's. Even if they were Jacks-of-all-trades such utilization would be extremely inefficient. Moreover, certain trades, primarily electrical work, require licensing, even in the relatively restriction-free climate of New Hampshire. As a result, all twenty contractors reported the use of sub-contractors. Six of the respondents subcontracted all phases of building, including carpentry, and three others explicitly reported subcontracting all phases of house construction besides carpentry. The remaining builders surveyed itemized the specialty trades which were subcontracted. The presentation of the data in Table V-3 gives one a picture of the myriad of non-carpentry trades utilized in the construction of housing in New Hampshire during the 1980's.

TABLE V-3
JOBS SUBCONTRACTED

Job	Small	Medium	Large	Totals
All	1	6	1	8
All trades excluding carpentry	1	2	0	3
Finish carpentry	0	3	0	3
Framing	0	2	0	2
Excavation/ foundation	2	5	1	8
Insulation	0	4	0	4
Labor	0	2	0	2
Cabinetry	0	1	1	2
Plaster/ drywall	2	4	1	7
Painting	1	3	0	4
Landscaping	0	3	1	4
Plumbing	2	5	1	8
Masonry	1	1	0	2
Electrical	2	6	1	9
Flooring/ carpeting	0	1	1	2

A small contractor from Lee, N.H., said that given a full-time crew of three carpenters, the only way his company could attain its volume of 6 houses in 1983 was to employ subcontractors. This builder subcontracted carpentry along with all specialty trades. This practice of subbing the same work for which in-house crews were utilized was a practice employed by six other building contractors. All cited the added flexibility of expanding volume without adding directly to payroll and "having fewer headaches" when housing volume fell, necessitating layoffs. Retrenchment in crews became the subcontractor's problem.

It is through the setting to work of a large number of trades, either simultaneously or in sequence, that a builder is able to overcome the isolation of small crews and the

need for knowledge of the many varied skills of housebuilding. Although the totality of skills may not be held by any one individual carpenter or construction company, the setting to work of various specialty trades, through subcontracting, constitutes the basis of collective labor.

2. Legal and Monetary Control.

The formal subordination of labor to capital entails the replacing of feudal guild restrictions with the relations of wage labor and capital. Restrictions of numbers of workers, their role in the labor process, and the overall volume of output a company can produce do not exist in New Hampshire housebuilding in the 1980's. Indeed, there is not even a limit to entry in the form of an examination to obtain a contractor's license, unlike larger states. The climate is relatively free of formal or legal restrictions to business activity.

Of the twenty building contractors surveyed, fourteen retained their own carpentry crews. All of these builders reported the use of hourly wages as their system of payment. The remaining six subcontracted all phases of construction and left payment to their subcontractors.

Of the fourteen respondents employing carpenters directly, ten indicated that the power to hire and fire was vested with the owner of the firm. Another four stated that this power was placed in the hands of general superintendents or construction coordinators, the upper

management of construction companies. Only one company reported hiring and firing on the level of foreman, and in that case the foreman was the owner's son. The discrepancy of fifteen answers for fourteen contractors can be accounted for by the response of one large Atkinson contractor who said the formal power to hire and fire was given to a job superintendent who had never exercised that power. Instead, he had deferred to the owner. The relationship of employer/employee is further exemplified by the jobsite interactions of owner and carpenter. In the main, the owner acted as employer rather than fellow worker, approximating Marx's 'pure money' connection between wage laborer and capitalist that characterizes the formal subordination of labor to capital. The only important exception is that of the small builder who acts as working foreman and/or lead carpenter in addition to assuming executive duties. Further elaboration of this point will be discontinued until Chapter VI where it is argued that the conditions of formal subordination occur as degrees on a continuum, with small builders satisfying such conditions only partially.

Finally, of the six remaining respondents who stated that they subcontracted all carpentry, five of them left hiring and firing up to the subcontractors themselves. Only one Manchester builder reported utilizing a "captive sub." He explained that the subcontractor was a "captive" because he controlled the "sub's" hiring and firing, in addition to providing 100% of the work.

To summarize, legal restrictions limiting the ability of a builder to employ or discharge any number of workers are not existent in New Hampshire. Neither are there formal barriers to entry in the nature of licensing for building contractors. In addition, control of hiring and firing is vested with either the owner or his management representatives. In all but the smallest five firms, the building contractor confronted his workers as employer rather than fellow worker. The monetary and legal relationship between employer and employee which serves as the basis for the formal subordination of labor to capital is exhibited by the data of my survey.

3. Relatively Small Capitalists.

The "**Fortune** 500" of April 30, 1984 was used as a first approximation of large scale capital. No homebuilders were found is this listing of the five-hundred largest industrial corporations for 1983, ranked by sales. At first it was believed that this was due to the small size of homebuilders in general, when compared to industrial giants. However, this assumption was proved incorrect by cross-referencing the "**Fortune** 500" list with that of the "**Builder** 100." A list of the largest one-hundred homebuilders is compiled by **Builder**, a trade journal published by the National Association of Homebuilders. While the May 1984, list is ranked in terms of total units completed, sales are also listed. The top homebuilder in the nation, U.S. Home Corporation of Houston, Texas, sold 14,028 units and

received gross revenues of $1.152 billion. Sales of this magnitude would have placed U.S. Homes in 267th position on the "**Fortune** 500."[1] While there are large and diversified homebuilders in the nation, no New Hampshire companies were included among the top one-hundred of the housing world. The largest builder surveyed, who is also the largest residential contractor in New Hampshire, reported completing 140 units in 1983, with sales of $45 million. In contrast, the contractor listed in one-hundredth position on the **Builder** survey sold 646 units and brought in revenues of $80 million.[2] Relative to either industrial corporations as a whole or the giants of housebuilding, even the largest of New Hampshire homebuilders could be classified as small capitalists.

Marx determined the scale of production by more than amount of sales, however. He was emphatic that the rise of large scale operations are accompanied by an ever rising minimum capital requirement. This did not seem to apply to the builders in the survey. Of the nineteen respondents to the question regarding financial circumstances at the start of their business, fifteen answered that their company was founded "on a shoestring" or with a small loan. One large builder reported starting "...with my tools and last week's pay check." Other answers included "mortgaging the same car three times," "selling $300 worth of stock to buy a truck," and "My dad started with fifty cents in his pocket." Only two builders reported founding the company with substantial assets. One respondent reported securing a large loan,

while another took over the family business which was valued at $15,000.

TABLE V-4
FINANCIAL CONDITION OF FOUNDING

Financial Condition	Small	Medium	Large	Totals
Shoestring/small loan	5	10	1	16
Bought into an existing company	0	1	1	2
Large loan	0	1	0	1
No answer	0	1	0	1

The practice of starting a housebuilding company with little money capital was found among companies of recent origin as well as those in business for a number of years. Companies in the survey average 16.8 years of existence, with starting dates beginning in the late 1970's and early 1980's as well as in the 1940's and 1950's. A large barrier to entry, in the form of a large minimum capital requirement, has not risen over the course of the post-World War II decades, to preclude the founding of a small scale housing company. Some evidence is found in the "Builder 100" survey which is consistent with the results of this study. On a nation-wide basis, only 14.6% of 1983's new housing stock was constructed by the large builders surveyed.[3] The top four firms accounted for only 3% of total output. This is certainly a competitive industry by traditional industrial organization standards.

The existence and use of the network of subcontractors helps explain this low minimum capital requirement. A carpenter can become an independent contractor by purchasing carpentry tools and subcontracting phases such as excavation and foundations which would require heavy expenses for fixed capital. If a small contractor were to purchase the commonly used bench tools and hand power tools for a crew of three from a major Boston construction supply house, the bill would come to less than $2,200 (see Appendix D for calculations).[4] This figure is biased slightly upward as it discounts purchasing used equipment through commonly used outlets such as pawn shops and yard sales. Furthermore, fourteen contractors claimed that they had access to rental equipment for jobs in which they did not possess the proper tool or machine.

In addition, the fifteen construction companies which were incorporated indicated that they were privately held. No incorporated housebuilder reported either publicly trading stock or incorporating for access to greater capital markets.

TABLE V-5
REASONS FOR INCORPORATION

Reason	Small	Medium	Large	Totals
Limited liability	2	10	2	14
Tax advantages	1	6	2	9
Proper business structure	1	0	0	1
Needed for bonding	0	1	0	1
Access to capital markets	0	0	0	0

The rationale most often given by contractors was that they incorporated for reasons of tax or liability. While large scale capital takes the form of the corporation, incorporation, in and of itself, does not necessarily imply large scale capitalism. Even two of the smallest firms, building less than ten houses per year, were incorporated.

Another sign of the small scale nature of New Hampshire housebuilding was the limited geographical scope of their market. Only one contractor reported building outside a fifty mile radius. He indicated his wide radius was mainly to service clients who had moved out of the area but wished to utilize his services again. Seventy-five percent of the contractors interviewed built within a thirty mile radius of their homes or offices.

TABLE V-6
GEOGRAPHICAL RANGE OF BUILDING

Range (in miles)	Small	Medium	Large	Totals
0-10	0	2	0	2
0-20	4	3	1	8
0-30	0	4	1	5
0-40	0	1	0	1
0-50	1	2	0	3
> 50	0	1	0	1

It must be noted that the limitation of geographical range varies with population density. One large builder reported that most of his work was found within his immediate town. That town, however, was located in what builders refer to as the "Golden Triangle." This area, bordered by Manchester on the north, Nashua on the

southwest, and Salem on the southeast (see Appendix D for map) is the fastest growing area in the state. A large Nashua builder, in an interview with Business NH stated:

> The federal government had done a study on where growth was going to occur. It was the first definition of the Golden Triangle. They had even prognosticated that Londonderry would have a population of one million by the year 2000....You didn't have to be an economist to figure out if we were going to house [the post-war generation], we were going to house them in areas where there was going to be affordable housing and where what at the time we called technological industries were expanding. And this was the area.[5]

According to Business NH data, more than 42% of 1983 housing starts occurred within the standard metropolitan statistical areas of Nashua and Manchester, within the confines of the Golden Triangle. A small geographical radius in this area would be far less limiting than the same radius in the sparsely populated, rural "North Country." The eight houses constructed in Berlin, the area's largest city, in 1983 represented a 266 percent increase from the year before.[6]

Nonetheless, New Hampshire builders operate on a small scale when compared to the largest homebuilders. The top eight firms on the "Builder 100" had operations that extended to a minimum of eleven states. All such companies operated in both east and west coasts, with one company building nation-wide and another in forty-two states, the District of Columbia, and Puerto Rico.[7]

4. The Untransformed Labor Process.

From the standpoint of the labor process studies reviewed in chapter II, the most essential distinction between the purely formal subordination of labor to capital and the real subordination is the lack of fundamental changes in both organization of work and technology that removes conceptual control from the workers themselves and centralizes it in the hands and minds of management. The results of the contractor and carpenter interviews will be presented here to develop the point that such a transformation has not occurred in residential carpentry in southeastern New Hampshire to date. The argument will be structured to first present the nature of organization of work, including the use and control of subcontractors and in-house crews, the degree of skilled labor utilized and developed, and the extent of the division of labor. Secondly, the impact of technological change is considered.

This final section will be developed in greater detail than the prior segments. An important purpose of this chapter is to show the distinction between the formal and the real subordination to capital. The fundamental distinction between these two stages of capitalist production is the degree of control exerted by the capitalist. The employment of collective labor and the legal control embodied in the relationship of wage-labor and capital is common to both structures of subordination. The scale of production is a relatively simple empirical question. However, the crucial differences between the

formal and real subordination of labor to capital, as well as the important theoretical questions, require an elaboration of the nature of the labor process.

a. Organization

It has been established that all the construction firms surveyed utilized subcontractors. Sidney Pollard (1965) has asserted, in terms of business organization, that subcontracting is more a method of evading management, than one of managing, as it reduces the problems of management to the workshop scale. In the following pages I will develop the position that while residential building contractors assert substantial control over conditions of continued employment, little effort is taken to directly control the labor process.

All twenty builders interviewed indicated that the scheduling and coordination of subcontractors was handled by either the owner or a management representative. This form of basic control assured that subcontractors would arrive when needed, any materials or equipment required would be available at the job sites, and any unforeseen delays or scheduling conflicts could be resolved. However, the responses relating to forms of surplus con- trol were far less unified. The most frequent response of residential builders when asked the question, "Do you control the way your subcontractors work?," was that 13 builders informed them of their quality standards. Of these thirteen builders, six specified standards in written job

specifications. Only nine of 20 contractors directly supervised the work of subcontractors. In the words of a Dover, N.H. contractor: "These people are professionals, they are expected to know what they are doing. Most people are very good." Five builders reported utilizing "checkbook control" by refusing to pay for sub-par work, with three expecting inferior quality work to be redone at the subcontrator's expense. No contractor claimed that he/she controlled the detailing of a subcontractor's work. These and the remainder of the responses are reported in Table V-7.

TABLE V-7
CONTROL OF SUBCONTRACTORS

Control Type	Small	Medium	Large	Totals
Inform subs of quality standards	4	7	2	13
Written standards	1	2	2	5
Direct supervision	2	5	2	9
Schedule/ coordinate	5	13	2	20
Checkbook control	1	2	2	5
Only if errors spotted	0	1	0	1
Do it right or do it over	2	1	0	3
Captive sub	0	1*	2	3
Control details of job	0	0	0	0
Control speed	0	1	0	1
Communicate customer wishes	1	0	0	1

*Also controls hiring and firing

Potential problems involved with the use of subcontractors are dealt with through careful pre-screening and the development of long term, stable working

relationships, rather than direct control of the subcontractor's labor process. Eleven of twenty homebuilders commented that recommendations of and referrals from other building contractors were prime considerations in selecting subcontractors, with thirteen explicitly citing reputation for quality work. Nine contractors held that viewing of their previous work was crucial to their employment decision. While twelve building contractors proclaimed that price (in the form of competitive bidding or job quotes) was used to decide among potential subcontractors, all of these respondents emphatically informed me that price was not the primary criterion for selection of subcontractors. Other important considerations include reliability and, for larger contractors, the carrying of proper insurance or bonding.

TABLE V-8
CRITERIA FOR SUBCONTRACTOR SELECTION

Criterion	Small	Medium	Large	Totals
Previous work	3	4	2	9
Recommendation/ referrals	4	6	1	11
Price	1	9	2	12
Reputation for quality	2	9	2	13
Reliability	0	5	1	6
Insured	0	5	1	6
Bonded	0	1	1	0
Ability to carry payroll	0	4	0	4
Availability	1	1	1	3
Ease of working relations	0	1	0	1

In addition, homebuilders tend to cultivate long term

working relations with their subcontractors when possible. Three contractors provided 100% of the work for certain subcontractors. Nine builders said they had used the same subcontractors "for years," with one Manchester builder specifying use of the same painting "sub" for twenty years. The benefits of stable relations with subcontractors were summed up by a small-volume Newmarket, N.H., builder who stated: "I've worked with them for a long time - I forget how we met, probably through community development work. If you find someone good, stick with them. They are more apt to do you a favor when it really counts. I've also become their friend and I get a good feeling about those I work with. You can also learn new skills from good subs."

The same type of formal and general control vis-a-vis subcontractors was generally utilized with regards to directly employed carpenters. Needs for detailed control mechanisms and close supervision were partially overcome by the use of skilled carpenters. Percentage distribution ranged from a low of 20% by the largest builder interviewed to a small contractor who claimed 100% of his carpenters were skilled.

Exactly what determines skill is a relative concept that has been subject to much debate in the broader fields of labor economics, as well as in the specific studies of the labor process. However, skilled workers in untransformed labor processes have been assumed to possess the mental skills of conception (or brainwork) as well as

TABLE V-8
PERCENTAGE OF SKILLED CARPENTERS

Percent	Small	Medium	Large	Totals
0	0	6	0	6
1-10	0	0	0	0
11-20	0	0	1	1
21-30	0	3	0	3
31-40	2	2	0	4
41-50	1	1	1	3
51-60	1	0	0	1
61-70	0	1	0	1
71-80	0	0	0	0
81-90	0	0	0	0
91-100	1	0	0	1

physical skills of execution (or manual work). This idea is consistent throughout the literature of the labor process. Builders were asked what a carpenter must be able to do in order to be considered skilled. The distribution of skills reported in Table V-9 reflects the builders' own definition of skill. Responses included both conceptual and physical aspects of that quality. Seven builders said the ability to plan the job was an essential ingredient of skill, with another five indicating skilled carpenters should be able to solve unforeseen problems and organize their work so as to anticipate the next step. This is closely related to the ability to work independently, without direct supervision. An additional seven contractors asserted independence as a prime criterion of skill. Six builders considered well roundedness important, entailing either the capability of "doing anything the contractor asks" or building a house from start to finish. The ability to read plans (known as

blueprints) was seen as an integral component of skill by seven builders.

Closely related to print reading was the ability to do layout. Laying out a building necessitates transferring dimensions from blueprints (in two dimensions) to the framing stock or finish trim (in three dimensions). Three builders also indicated that they often work without prints, and layout therefore requires the ability to transfer written or verbal dimensional specifications to the lumber. As such, layout entails both physical and mental aptitude. Builders thought working without supervision was a crucial skill in seven cases while another eight constituted it as an important dimension of skill. These and the remainder of builder responses are summarized in Table V-10. Responses concentrating upon mental or conceptual skill are listed in the first five rows. Seventeen contractors answerd this question. Of those contractors, fifteen indicated that these conceptual attributes are an important feature of skill.

It was noted in the penultimate row that ten contractors responded that finish work was a task that required considerable skill. Yet many contractors and working carpenters realize that there are different types of finish work. Installing shelves in closets and building a hardwood spiral staircase are both finish work, but they require significantly different degrees of skill. Indeed, two of the contractors surveyed considered the first type of

TABLE V-10
CONTRACTORS' CONCEPTIONS OF SKILL

Skill	Small	Medium	Large	Totals
Work Independently	1	5	1	7
Read Square	1	2	0	3
Layout	4	6	0	10
Read Prints	2	3	2	7
Brainwork/plan job	3	3	1	7
Solve problems/ anticipate next step	2	3	1	6
High quality	3	5	0	8
Both framing and finish	1	5	0	6
Train others	0	2	0	2
Good taste	1	0	0	0
Anything contractor asks	0	1	0	1
Work quickly	2	2	0	4
Finish work	3	7	0	10
No answer (subbed)	0	3	0	3

finish work (closet shelves, baseboards) to be amongst the least skilled aspects of carpentry, on a par with repetitive sawing and nailing plywood. Much the same is true for the structural work of framing and sheathing. Constructing a complex roof of multiple pitches, hips, and valleys requires the cutting of compound angles and the use of three-dimensional geometry in the layout. This is a task involving far more skill than framing a wall consisting solely of ninety-degree angles or attaching plywood sheathing. When asked what the most skilled carpentry jobs consisted of, eight builders felt the cutting of complex angles for roof rafters fell into this category. Another twelve reported that fine finish work, such as stairs and cabinetry, belonged in the "most skilled" category. Other responses continued the line of reasoning in Table V-10,

that layout, print reading, and finish work in general were essential competencies for the skilled carpenter.

TABLE V-11
MOST SKILLED PHASES OF CARPENTRY

Skill	Small	Medium	Large	Totals
Finish work	1	6	0	7
Stairs	2	4	1	7
Cabinets	2	3	0	5
Complex roofs	3	4	1	8
Post and beam joinery	1	0	0	1
Framing	1	3	1	5
Direct Crews	0	1	0	1
Get along with others	1	0	0	1
Well-rounded	2	0	0	2
Historical renovation	1	1	0	2
Read prints	3	2	0	5
Develop and implement ideas	1	0	0	1
Layout	3	6	0	9
Know lumber characteristics	0	2	0	2
No answer	0	4	0	4

In summary, 88 percent of the seventeen contractors answering the question concerning their conceptions of skill, explicitly stated that some form of brainwork must be included in their definition. If the ability to do quality work independently implies conceptual aspects, then the percentage of contractors so responding increases to 94 percent, or 16 of 17 contractors.

Responses of carpenters to questions concerning the nature of skill were similar to those of the building contractors. Ten carpenters said thinking ahead and figuring out problems on one's own constituted important

dimensions of skill. Another seven considered the ability to layout buildings to be crucial. Five carpenters responded that the ability to read plans and framing squares was a measure of skill, with five more commenting that knowing which tool to use in which situation was necessary for a carpenter to be considered skilled. All twenty carpenters included some measure of "brainwork" in their definition of skill. Like the contractors, many carpenters included physical skills in their definition. The most prominent responses were stairs and rafters, as well as "doing quality work." These and other responses are summarized in Table V-12.

TABLE V-12
CARPENTER DEFINITIONS OF SKILL

Definition	Small	Medium	Large	Totals
Building house start to finish	3	3	0	6
Build anything from wood	0	0	1	1
Think ahead	4	3	0	7
Figure out problems	2	0	1	3
Know when to ask	0	1	0	1
Know proper use of tools	3	2	0	5
Read plans	2	1	0	3
Read square	1	1	0	2
Do quality work	4	3	0	7
Layout	2	3	2	7
Stairs/rafters	1	2	2	5
Interior finish	0	2	0	2
Execute Directions	2	0	0	2
Experience	0	1	0	1

When queried about skills needed to advance, the ability to work independently was the most frequent response. Other carpenters stated that being reliable and developing a professional attitude towards one's work were

key attributes contributing to advancement. Advancement criteria are tabulated in Table V-13.

TABLE V-13
SKILLS NEED TO ADVANCE

Skill	Small	Medium	Large	Totals
Work independently	4	2	0	6
Think ahead	1	1	0	2
Learn quickly	2	1	0	3
Attitude/reliability	2	2	1	5
Quality work - 1st time	0	1	1	2
Put in best effort	0	0	1	1
No advancement	0	1	0	1

The responses of the carpenters concerning the definition of skill were consistent with those of their employers. For the working carpenters in this survey skill consisted of brainwork as well as physical production, the ability to work on one's own, and the development of a professional attitude of reliability and quality work.

In addition to employing skilled carpenters, the New Hampshire housebuilders interviewed in this study provided incentives to increase skills. Of the fourteen builders that directly employed carpenters, 100% indicated that hourly wages increase with skill level. Thirteen offered informal, on-the-job training by allowing less skilled workers time away from simpler tasks to watch the more skilled and learn how to do new and more complicated tasks properly. The one builder who did not use this form of hands-on training responded that he offered a formal training program by utilizing the Associated General Contractors (AGC) apprenticeship program and sending

qualified carpenters for classroom instruction. In addition to positive incentives of increased wages and training opportunities, seven builders noted that increasing the quantity and quality of jobs done was a condition for further employment. Two builders qualified this statement by excluding their top carpenters, whom they deemed already highly skilled, from this condition. Four builders left it to the individual carpenter's discretion as to whether or not he/she would increase his or her skills, preferring to rely on monetary incentives.

While thirteen contractors indicated they employed unskilled laborers, the majority of responses fell into the categories of unskilled labor and temporary summer help. Two builders admitted that not everyone they hire is either mentally of physically capable of being a craftsman, yet, they were retained on the payroll and assigned to less skilled tasks. Five builders responded that there was simply no place in their organization for the permanently unskilled.

Although only one builder indicated that his labor force of carpenters was 100% skilled, the evidence presented does not support the case of a conscious effort to de-skill, as would be found in a labor force transformed to meet the needs of specifically capitalist production. On the contrary, all fourteen contractors responding to this category (excluding the six who subcontracted all carpentry), provided training to increase skills and

TABLE V-14
TRAINING, COMPENSATION, AND SKILL

Skill, training and compensation	Small	Medium	Large	Totals
Informal OJT	5	6	2	13
Formal training	0	1	0	1
Pay increases with skill level	5	7	2	14
Carpenter must increase skill	3	4*	0	7
Worker's choice on skill increase	1	3	1	5
No place for permanently unskilled	4	1	0	5
All workers not capable of craftwork	0	2	0	2
Uses unskilled labor	0	6	2	8
Uses temporary summer help	0	3	1	4
No answer	0	6	0	6

*with the exception of top carpenters in two cases

monetary incentives for doing so. Thirteen of fourteen either insisted upon carpenters taking the initiative to increase the skills, or gave them the choice of whether to become more skilled or not.[8]

The encouragement of skill development on the part of housebuilding contractors was corroborated by the evidence gathered in the carpenter survey. Nineteen of twenty carpenters indicated their employers provided opportunities for them, and their fellow carpenters, to learn new skills. The only carpenter who did not answer affirmatively was the sole carpentry employee who "pretty much knew everything" before he started work with his current employer.

The continued use of a range of skilled carpenters is consistent with the responses of homebuilders with respect

to their general approach to the housing market. When surveyed on the positive vs. negative aspects of utilizing skilled carpenters, positive responses outnumbered negative ones by over three to one. Positive contractor responses were clustered in the categories of doing quality work, doing the job once, and working without supervision. On the other hand, six builders claimed there were no negative aspects involved with using skilled carpenters. Other responses were scattered over a variety of reasons. While four contractors found skilled carpenters to be expensive, three of them indicated that positive aspects overshadowed the expense. Two contractors felt skilled carpenters were often arrogant or "prima donnas," and two additional contractors became annoyed when a skilled carpenter would second-guess them or do things their own way when the contractors had perceived their own methods and details which were different.

TABLE V-15
BENEFITS OF SKILLED CARPENTER USE

Benefit	Small	Medium	Large	Totals
Quality work	4	6	1	11
Work without supervision	4	5	1	10
Do job only once	2	3	0	5
Work quickly and efficiently	1	2	1	4
Train others	0	1	0	1
Cost effective	0	1	0	1
More responsible	0	1	1	2
Necessary for custom building	1	1	0	2
Less waste	0	1	0	1
No answer	0	4	0	4

TABLE V-16
NEGATIVE ASPECTS OF USING SKILLED CARPENTERS

Negative Aspect	Small	Medium	Large	Totals
None	2	3	1	6
Arrogance	0	2	0	2
Too independent	0	1	0	1
Second guessing	1	1	0	2
Difficult to find	1	0	0	1
Expensive	1	2	1	4
Not showing up	1	0	0	1
Work too slowly	0	1	0	1
No answer	0	4	0	4

The clustering of positive responses around the two aforementioned categories of quality workmanship and working without supervision can be explained by reference to the nature of competition and the organizational structure of housebuilding firms. When asked how they achieved their niche in the market and met their competition, twelve contractors responded that either quality for the price or simply quality and attention to detail was an important determinant. Eight builders also noted that the unique features and design of their houses played an important role in securing their competitive positions. It would be safe to conclude that unique, and non-standardized, features would require a skilled carpenter to execute with a degree of quality. In contrast to the eighteen quality-related responses to securing a niche in the market, there was a dearth of answers of the "cheapening of commodities" variety. Only one builder held the speed of construction as

an important consideration, while two contractors considered reducing cost through expanding the scale of production. No contractors asserted that technological change in construction methods served as a way of meeting competition, although two considered using advanced materials and design important. These contractors built solar homes and their use of the term "advanced" referred to thermal properties, in both instances. In fact, there were only three responses stating price as a sole determinant of competitive position.

TABLE V-17
METHODS OF MEETING COMPETITION

Method	Small	Medium	Large	Totals
Quality	2	4	1	7
Quality for price	2	2	1	5
Unique features and design	2	5	1	8
Good business organization	0	2	0	2
Name recognition	2	4	2	8
Customer relations	0	2	0	2
Speed of construction	0	1	0	1
Technological change	0	0	0	0
Scale of production	0	1	1	2
Price	0	3	0	3
Perceive no competition	1	3	0	4

The need to avoid close supervision and its related costs can be traced to the structure of management in the firms surveyed. The answers of building contractors who expressed that the ability to work independently was a prime benefit of utilizing skilled carpenters were clustered

amongst the small and medium contractors. Of the five medium contractors so indicating, only one had an office staff of greater than five. It will be asserted in hypothesis two that management structures become more complex and detailed as housing volume grows. Braverman specifically argues that the ability of management to separate conception from execution requires a front office large enough to oversee and supervise detailed workers. If such a structure is lacking, workers who can supervise and direct themselves, save for final inspection or unanticipated problems, increase in importance. This point will be developed further in the next chapter.

Eighty percent of the small contractors held independence and ability to figure out small problems as an important benefit. This is partially derived from their specialization in custom homebuilding, remodelling and renovation. In these situations, non-standardized tasks and problems are more likely to arise, and thereby necessitate a carpenter who can think and anticipate the consequences of how what they've built will affect the next step. In addition, all small contractors reported that they worked with tools, and constant interruptions for what they perceive as trivial questions reduce the contractors' own productivity, and increased his headaches. This attitude was summed up by a small Newmarket, N.H., builder who believed that: "I just can't use unskilled people - it's not even a choice on this job."

In summary, the labor process literature has universally asserted and often substantiated that the development of specifically capitalist production is accomplished by conscious efforts to de-skill workers. The attitudes expressed by the builders interviewed concerning the benefits of continued usage of skilled carpenters were a far cry from Taylor's dictum that workers who are only generally managed are not adequately managed. Without the separation of conception from execution, the labor process remains untransformed. The evidence presented indicates a continued need for self-directed, skilled workers who can perform quality work without immediate or constant supervision. This far more closely approximates the conditions of the formal subordination of labor to capital than the real subordination.

A key feature of the transformation of the labor process throughout history has been the application of a technical or detail division of labor. The distinction between this technical division and the broader social division of labor is held to be extremely important in the analysis of Harry Braverman. The social division of labor, which pre-dates capitalism, divides the totality of work into separate crafts. While men and women socially divided may specialize in the production of distinct goods, the tasks within the craft are not fragmented into separate operations. In contrast, the emergence of a technical division of labor was specific to the capitalist mode of production. This form sub-divides the tasks of a particular

craft into distinct operations and assigns them to particular individuals. Braverman considered the de-skilling that accompanied the organizational form - which divides humanity, and forces upon workers mindless repetitive tasks in the name of productivity and profits - a crime against humanity. Such a detail division of labor is an integral component of the transformed labor process that characterizes specifically capitalist production and the real subordination of labor to capital. Evidence of the widespread extension of the detail division of labor was not apparent among the southeastern New Hampshire homebuilders interviewed for this study.

A considerable social division of labor exists in the form of the various trades contractors utilized on a job site. Although builders indicated formal control through the system of payments and general supervision, no evidence of the detailing of the labor of the separate subcontractors was given by the builders interviewed.

When asked about the degree of technical division of labor of their in-house crews, ten of the fourteen builders indicated they employed "all-around" carpenters, who were able to work on all aspects of house carpentry. The remaining four companies detailed the work into framing, or structural work, and finish carpentry. No builder reported any further detailing of the division of labor.[9]

The New Hampshire builders surveyed partially compensated for the lack of detail in the division of labor

by the employment of apprentices and/or helpers. Of the fourteen homebuilders directly employing carpenters, half indicated they utilized apprentices or helpers. Although in training to become all-around carpenters, new or apprentice carpenters must prove themselves worthy by successfully completing the tasks requiring lesser skill before gaining access to more complicated tasks. In addition, apprentices are more likely to be assigned odious tasks such as foundation waterproofing, manual materials handling, and clean up, than a skilled long-term carpenter. Finally, it is the apprentices or helpers who are assigned "gopher" tasks like running for coffee, purchasing incidental materials and the like. Sociological and ethnographic studies of commercial and industrial building trades by Riemer (1979) and Applebaum (1981)[10] hold the assigning of such "grunt work" tasks to newcomers to be a component of the socialization into the work sub-culture. This process exempts highly skilled carpenters from working far under their skill levels.

This is also consistent with the data presented on turnover. Only two respondents reported what they considered low turnover. These contractors said they provided good benefits and steady employment. Moreover, while they could give no figure in percentage terms, six contractors indicated that their turnover of less skilled carpenters was quite high but they did their utmost to retain skilled leadmen. This seems consistent with the above data on the division of labor. Less skilled

carpenters and apprentices spend a while doing the lesser skilled tasks as a part of training, then either advance with the company or move on to other employment. As they progress or leave, new helpers and/or apprentices perform the simpler and less appealing tasks they once did. Although knowledge of the subtleties of a residential jobsite reveals a greater division of labor than is immediately apparent by the response "we use all-around carpenters," the separation of tasks among long term carpenters and apprentices is not evidence of a strict detail division of labor. This is especially true in light of the division between frame and finish being the farthest extension of the detailing of workers among the contractors interviewed. Furthermore, seven builders responded that carpenters are assigned to do non-carpentry tasks. This indicates that even the social division of labor is transcended on smaller jobsites, most often in the areas of painting, plastering and wallboard, and insulation.

TABLE V-18
DIVISION OF LABOR (CONTRACTORS)

Degree of Detail	Small	Medium	Large	Totals
All-around	4	5	1	10
Frame-finish	1	2	1	4
Further detail - frame	0	0	0	0
Further detail - finish	0	0	0	0
Apprentices/ helpers	3	4	0	7
Carpenters do non-carpentry jobs	3	4	0	7
No answer/carpentry subbed	0	6	0	6

The answers provided by carpenters also indicated a low degree of detail in the technical division of labor. Eighteen of the twenty carpenters interviewed considered themselves to be all-around carpenters, or in training to be all-around. Two of these eighteen all-around men stated they were working towards all-around knowledge, but were too inexperienced to consider themselves truly all-around yet. Only two carpenters specialized in framing, without doing finish work. Four carpenters specialized in finish work at the time of the interview, but all claimed to have a good knowledge of framing as well. These four respondents considered finish work to be a better class of work, and one went so far as to simply refuse to frame after recovering from a shoulder injury. None of the carpenters surveyed specified any finer division of labor than the separation of framing and finish work.

TABLE V-19
DIVISION OF LABOR (CARPENTERS)

Degree of Detail	Small	Medium	Large	Totals
All-around	8	8	2	18
Frame	0	1	1	2
Finish	0	4	0	4
Further detail	0	0	0	0

To summarize, the degree of detail in the jobsite division of labor is low, characteristic of the untransformed labor process. The farthest detailing among New Hampshire builders surveyed was division between specialties of framing and finish work. While lower skilled

and unpleasant tasks are generally performed by apprentices or helpers, there are no indications that any one individual is held in this position. On the contrary, the contractors' provisions of incentives and training for carpenters to advance seems consistent with their application of an unspecialized division of labor. The current organization of residential jobsites in southeastern New Hampshire stands in opposition to this important basis of achieving specifically capitalist production.

b. Technology

Another important attribute of the formal subordination of labor to capital, and its untransformed labor process, is a relatively low level of mechanization. In contrast, one would expect the labor process of specifically capitalist production to be transformed upon a technological basis. It will be argued that the technological relations displayed in residential carpentry during the survey period in the early 1980's closely approximate those of the formal subordination of labor to capital, despite some fundamental changes in technologies themselves.

As previously analyzed in Chapter II, writings within the labor process tradition stress that control of the means of production and choice of technologies is an important aspect of controlling the production process itself. In the absence of management-driven control over technique and machine, control by the workers themselves emerges. In New

Hampshire residential construction, both the types of technologies employed and relations of ownership favor the worker's control of the point of production, characteristic of an untransformed labor process.

Of the twenty builders surveyed, none fully owned or controlled the tools and machines utilized by their carpenters. Six builders subcontracted all carpentry work and abdicated all responsibility concerning tools and machines to the subcontractors themselves. Of the remaining fourteen contractors, 100% required their carpenters to provide their own hand tools. Another six contractors required carpenters to provide power hand tools, with one contractor responding that his carpenters must own whatever they need on his jobsites. Much of framing and finish work is accomplished with the use of hand or power hand tools. With 100% carpenter ownership in the first category and 50% in the second, the evidence for all-encompassing ownership and control of the means of production is not apparent within the homebuilding companies surveyed.

TABLE V-20
REQUIRED TOOLS PROVIDED BY CARPENTERS
(CONTRACTOR RESPONSES)

Tool	Small	Medium	Large	Totals
Hand tools	5	7	2	14
Power hand tools	1	4	1	6
Bench tools	0	0	0	0
Heavy equipment	0	0	0	0
Whatever they need	0	1	0	1
No answer/carpentry subbed	0	6	0	6

One hundred percent of the carpenters interviewed indicted ownership of hand tools. Another seventy percent (14 of 20) said they owned their own power hand tools, with an additional forty-five percent claiming ownership of stationary construction equipment. Of the sixteen carpenters owning power hand tools, nine used their own tools on the job, even though the contractor also provided these tools. Only five left their tools at home and used those of their employer. Three carpenters highlighted the completeness of their tools inventories by citing the ownership of pneumatic nailers. Carpenter responses concerning tool ownership are presented in Table V-21.

TABLE V-21
TOOL OWNERSHIP

Tool Type	Small	Medium	Large	Totals
Hand	8	9	3	20
Power hand	4	8	2	14
Stationary	2	6	1	9
Pneumatics	1	2	0	3

Despite extensive power tool ownership by carpenters, the contractors interviewed reported that carpenters were not responsible for the ownership and provision of bench tools. This category includes machines such as table saws, power mitre boxes, radial arm saws, and drill presses, etc., which greatly increase the speed and accuracy of carpentry. The evidence of ownership of tools and machines is mixed - partly owned by workers and partly by the building contractors. In general, the builders are responsible for

the provision of bench tools, or stationary equipment, which are few in number but relatively expensive. On the other hand, carpenters are responsible for ownership of a greater multitude of less expensive hand tools in all cases, and hand-held power tools in 50% of the companies surveyed. In addition, contractors were responsible for providing accessories to carpentry such as heat sources in winter, scaffolding, earthmoving equipment.

TABLE V-22
EQUIPMENT PROVIDED BY CONTRACTORS

Equipment Type	Small	Medium	Large	Totals
Hand tools	1	0	0	1
Power hand tools	5	4	2	11
Bench tools	5	7	2	14
Pneumatics	2	2	2	6
Earthwork equipment	0	6	2	8
Staging	1	2	2	5
Truck	2	4	2	8
Surveying equipment	0	1	2	3
Heat source	0	2	0	2
Generator	0	2	1	3
None (all subbed)	0	6	0	6

When queried concerning their rationale for providing or not providing tools and equipment, contractors invariably gave answers consistent with only formal control over the production process. No builder answered that ownership of tools and equipment would enhance his control over the working carpenter. Fifty percent of respondents answered that their decision to make power tools and equipment available to carpenters was based on tradition - "That's just the way it's done around here." Five additional

builders indicated that quality work necessitates quality tools and equipment. Provision of quality tools and equipment was seen as a requiste expense, given the aforementioned method of providing quality construction to achieve a market "niche." Another five contractors spoke to monetary aspects, saying either they did not pay their carpenters enough to expect them to use their own power tools or the similar statement of: "...if I made my carpenters supply their own tools, I'd have to pay them more." This answer implies a link between the partial loss of control of tools and equipment by carpenters and their diminished control over wage determination. Yet such gains by employers at the expense of workers is totally consistent with the formal subordination of labor to capital. Only one

TABLE V-23
CONTRACTOR REASONS FOR PROVISION OF TOOLS/EQUIPMENT

Reason	Small	Medium	Large	Totals
Tradition	2	4	1	7
Quality	3	1	1	5
Better control of workers	0	0	0	0
Insure availi-bility	2	0	0	2
Tax deductable	1	0	1	2
Wages paid are too low	2	3	0	5
Higher produc-tivity	1	0	0	1
Convenience	0	2	0	2
Not used enough for carpenter to buy	1	1	0	2
Kept in working order	0	1	0	1
No Reason (subbed)	0	6	0	6

builder said that his provision of tools and equipment enhanced productivity.

In contrast to the characteristics exhibited among the contractors surveyed, capitalists seeking to really subordinate workers would centralize control over the requisite means of production. Consistent evidence of this occurring, in order to enhance control over carpenters, has not been established in the data collected from contractor interviews.

Further substantiation of the low technological base can be found in the nature of the technology utilized on a job-site. The use of large scale mechanization was extremely limited. Only one company reported the use of any automatic fixed cycle machinery. This was a large one whose operations included a lumber yard that manufactured trusses. This equipment was not transported to the job-site itself during the process of construction. The remaining forms of mechanization consisted of heavy equipment for earthwork, pneumatic (or air powered) nail guns, and the above mentioned bench tools.

TABLE V-24
USE OF "LARGE SCALE" MECHANIZATION

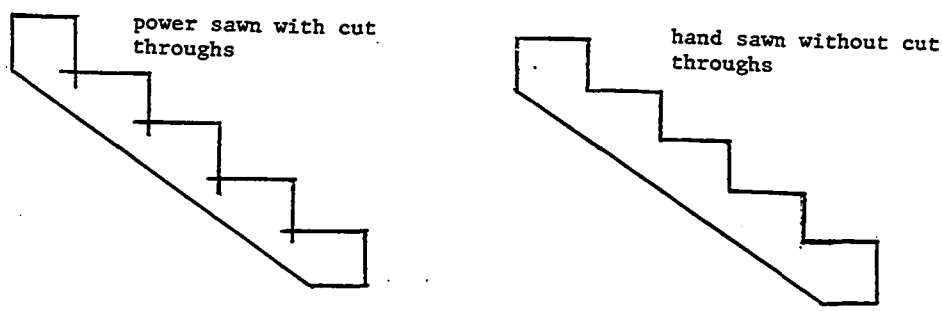
Machine	Small	Medium	Large	Totals
Bench tools	5	7	2	14
Heavy equipment	0	5	2	7
Pneumatics	2	2	2	6
Fixed-cycle equipment	0	0	1	1
None (all subbed)	0	6	0	6

While bench tools and air guns greatly increase productivity and speed when compared with hand tools, the conceptual control of this equipment remains with the working carpenter. He or she must know where to place the nail, and which type of nail to use, whether the nail is driven with an air gun or a hammer. Similarly, a carpenter must measure and cut a board to length and width. This does not change with the use of table saws, power mitre boxes, or radial arm saws. The main difference is whether one moves the tool over the lumber (in the case of hand and power hand tools), or the lumber through the tools (as in stationary equipment such as table saws). Nevertheless, the responsibility for proper set-up lies with the immediate operator; it is not pre-conceived by an engineering or management department removed from the immediate point of production.

In most cases, the use of bench tools adds considerable speed to the operation. This is especially true when it comes to repetitive cutting. In the case of cutting many boards to their proper width, the table saw's rip fence can be adjusted to this width once, thereby eliminating measurement (and saving time) for each piece of stock. The same logic operates with regards to repetitive cutting of lengths. The sawyer can measure once and place a stop block at the proper location from the blade of the radial arm saw or power mitre box. All boards placed against the stop will be cut to the same length, again

eliminating the need for repetitive measurement. In some cases bench tools are more accurate. A table saw with a fixed guide will generally produce a more accurate cut than a hand-held saw cutting by eye. In others, hand-held, non-power tools, are the primary option. In fine finish work, hand tools may often predominate. For example, a circular saw blade, whether stationary or hand-held, is not particularly adaptable to cutting curves with a tolerance of 1/64th inch, but a hand-held coping saw is. If one cuts stair risers with a circular saw, one must cut through to remove the stock at hand. The use of a hand saw eliminates this unsightly problem. (See illustration 1).

ILLUSTRATION 1



In other instances, time can be saved by the utilization of hand tools. For instance, when a carpenter must trim one edge of a door or piece of window trim to accommodate a slightly out of square situation (which is the rule in renovation work and is common even in new construction), setting up a table saw for a one-time angled rip cut may take up to an hour. The same operation can be done in minutes by using a hand-held block plane. Not only

do carpenters control the tools used on the job-sites surveyed, but must also decide which situation requires which tool. Learning to make these mental decisions is an important step towards acquiring the skills of doing unsupervised quality work that the builders surveyed held in high regard.

The worker controlling the machinery rather than becoming an appendage to the machine was evident even among those contractors that utilized heavy equipment for earthwork. Certainly excavating with a bulldozer or a back-hoe is far more productive than doing the same job with a shovel and wheel barrow. It should also be obvious that a bulldozer and back-hoe are far more difficult to operate than a shovel or wheelbarrow. The operator must control not only the driving mechanism but the depth and weight of the "bite" into the earth, all the while being conscious of the people and structures, not to mention buried power lines or water pipes, surrounding their equipment's operation. In all cases, the activation of the equipment and discretionary decisions lie with the operator, not the machine itself.

Indeed, all equipment utilized on the residential job site was below level four of James Bright's mechanization profile (see Appendix B for reproduction). According to Bright, levels of mechanization can be classified according to the initiating source of control, with the human hand at the low end (level 1) and fully automated, self-adjusting machinery at the high end (level 17). Mechanization levels

one through four entailed the human being as the initial source of control and a variable response of the machine. Only with level five, and fixed-cycle machinery, did pre-determined technical control commence. Bright also found a declining ratio in the relationship between automaticity and skill requirements, beginning with level five.[11] The mere use of machinery by building contractors does not necessarily imply technical control of the production process, nor de-skilling. Indeed, the opposite is true - the machinery utilized on a construction job-site, while generally owned by the building contractor, is controlled by the carpenter. Once again we find the formal relations of ownership, but not a fundamental transformation of the labor process.

The nature of on-site mechanization yields positive effects on general skills, mental exertion, and discretion on the part of the worker. It is precisely these worker attributes that the organization of work under specifically capitalist production strives to overcome. Despite a lack of large scale on-site mechanization, substantial technological change has occurred in the form of the substitution of pre-manufactured components. A survey of trade journals, such as **Automation in Housing/Systems Building News**, reveals that these components are produced under factory conditions which apparently approximate the real subordination of labor to capital. While an in-depth study of components manufacture is beyond the immediate

scope of this dissertation, the effect of pre-manufactured component usage is of considerable import.

All builders surveyed who did not subcontract carpentry reported that they used pre-manufactured components in some phases of building. Fourteen contractors, representing 100% of those directly engaged in carpentry, used pre-hung doors and factory glazed windows. Twelve of the fourteen respondents installed cabinets manufactured off-site. Only two builders insisted on making their own cabinets, and these builders had reputations among their peers of placing craft pride above profits. In addition, fifty percent of the contractors interviewed said they purchased and installed interior trim from a lumber yard rather than making it on site. Turning from finish to structural components, ten contractors indicated they used roof trusses, with an additional four responding that they installed floor trusses. Only one builder reported ever erecting a penalized house. (Penalized houses are those in which wall sections arrive on site completely framed and sided, with the windows and doors already installed. This is considered to be an advanced mode of pre-fabrication even within industrialized building circles.)[12] This Manchester contractor has since abandoned use of wall panels, citing that delivery delays and improper dimensions increased cost far beyond "stick building" the same structure on site.

The most frequent response among homebuilders, when asked why they used components, was that it saves time. Twelve of nineteen builders so responded. An additional six

TABLE V-25
USE OF COMPONENTS

Component	Small	Medium	Large	Totals
Roof truss	1	7	2	10
Floor truss	0	2	2	4
Wall panels	0	1	0	1
Pre-hung doors	5	7	2	14
Windows	5	7	2	14
Millwork/trim	2	5	1	8
Cabinets from shop	1	3	1	5
Cabinets from factory	2	6	1	9
No answer (left to subs)	0	6	0	6

contractors indicated that using components saved on labor cost and twelve also reported that using components was less expensive, when one includes time and materials. An additional seven contractors reported using components to achieve technical results not possible with traditional methods of site construction. Pre-glazed and insulated windows have far superior thermal properties than site built, single glazed windows. Roof trusses (or trusses in general) have the capacity to span long distances without supporting members. If one desires a large (more than a 12-14 foot) open space, trusses become necessary.

While contractors appear to be making an effort to reduce cost through lowering time and expense of construction, no systematic effort to reduce skills through substitution of components was evident. Only two contractors indicated utilizing less skilled labor was a consideration in the decision to build with components. Both of these builders said they used finished components

TABLE V-26
CONTRACTOR REASONS FOR COMPONENT USE

Reason	Small	Medium	Large	Totals
Time savings	2	8	2	12
Less expensive	4	7	1	12
Saves labor cost	2	3	1	6
Thermal properties	2	0	1	3
Technical reasons - span	1	3	0	4
Allows for standardization	0	1	1	2
Fewer call-backs	0	0	1	1
Allows use of less skilled labor	0	1	1	2
Higher quality	3	2	0	5
No answer	0	6	0	6

because they couldn't find enough carpenters possessing traditional finish work skills. Despite the lack of conscious effort some long term de-skilling has indeed taken place. If few construction companies build their own cabinets and windows, or hang their own doors, these skills cease to be included in the contemporary definition of a skilled, all-around, carpenter.[13]

Yet, the substitution of components for on-site labor is not a random process. Earlier (see Table V-11) a substantial number of contractors considered roof framing, cabinet work, and finish trim among the most skilled phases of carpentry. On the other hand, wall framing and sheathing were considered to be tasks requiring only low levels of skill. If one looks at the areas of component substitution, it seems to be occurring in areas that require great degrees of skill and accuracy, as well as long amounts of time. On-site cabinetry is both technically exacting and extremely

slow. Given the rather dusty atmosphere of a construction site, it is impossible to achieve the quality finish one could obtain in the "Clean room" of a cabinet shop or factory. In addition, precise joinery requires a set of woodworking tools and machines not ordinarily possessed by the on-site builder. Properly equipping oneself entails a substantial investment in fixed capital that would be difficult to justify for an activity subsidiary to house construction. When the question of purchase vs. self-fabrication resolved to one of monetary concerns, a clearly defined majority purchased finished cabinets. The only two builders surveyed who did their own cabinet work held profitability as a secondary concern to craft pride and enjoyment of their work. A similar case can be established for roof construction. Building a roof from trusses requires both less time and less accuracy than conventionally framing a roof from rafters. In addition to the greater physical skills, the "brainwork" of calculating the correct pitch has been done at the factory. Building a roof from trusses is the quick work of installation. Building a roof from rafters is a complex interaction of head and hand. As such, rafter construction is considerably slower.[14]

The difficulties of roof framing were analyzed in a fourteen page illustrated article in the August/September 1982 issue of the trade journal, **Fine Homebuilding.** In "Putting the Lid On," Don Dunkley stresses the need for pre-planning as well as the mental and physical complexities of

roof framing. An extensive list of fourteen steps is offered to make the transition smoother from mental calculation and layout, to the cutting of complex angles, and eventual final assembly. With each step the author offers potential pitfalls and methods of overcoming them. Dunkel introduces this article by stating:

> Framing a roof can be perplexing, physically taxing and sometimes dangerous. However, with thoughtful organization of rafter layout, production rafter-cutting techniques and carefully built scaffolding and bracing to help raise the ridge and rafters, your celebrating doesn't have to come out of a sense of relief.[15]

The more complex a roof gets, the more taxing the mental calculations of geometry and physical cutting of compound angles become. In the construction of a truss roof the hip and valley rafters - along with appropriate jack rafters and frieze blocks - come pre-cut, and marked for assembly (see Appendix C for a glossary of roof framing terms). The most complicated parts of the roof framing job are transcended by the substitution of factory built components. Much of the time savings results from the elimination of these steps and the reduction of the job to one of assembly. Although mentioned only peripherally by the builders interviewed, the increasing availability of components is a factor in their acceptance. Windows and doors are standard catalogue items for large lumber yards and millwork outlets. Commonly used items are carried in stock, with only large or rarely used sizes being custom

ordered. Trusses are made available in a similar manner, with large lumber yards, including one owned by a builder in this study, manufacturing them at facilities set up in the yard.

All carpenters surveyed reported some experience with the installation of pre-fabricated components. The use of factory built doors and windows was universal among those sampled. Seventy five percent of carpenters installed pre-built cabinets. Those who did not claim to install pre-fabricated cabinets included three carpenters who worked for small custom builders who built cabinetry on-site, as well as two employees of a large builder who used only custom-order cabinets from a specialty shop. When queried these carpenters did not consider custom cabinets to be a pre-fabricated component. Eleven of twenty carpenters had built roofs or floors by using factory-built trusses. This included all of the carpenters working for large builders, nearly 45 percent of those employed by medium builders, and half of the carpenters of small firms. Only one carpenter had ever erected a house using pre-fabricated wall panels. The data displayed in Table V-27 are basically consistent with the responses of contractors found in Table V-25.

In the main, the carpenters interviewed found the benefits of component use to outweigh the potential adverse effects. Fifty-five percent of the respondents found using components to be both faster and easier. One found component use to be more interesting than traditional

TABLE V-27
COMPONENT INSTALLATION

Component Type	Small	Medium	Large	Totals
Doors/windows	8	9	3	20
Cabinets	5	9	1	15
Trusses	4	4	3	11
Wall panels	0	1	0	1
Skylights	2	1	0	3
Kitchen/Bathroom Units	1	1	0	1

methods. Although convincing evidence of significant resentment of skill loss was not found, six carpenters did lament that they were not learning some traditional methods. These responses were concentrated among carpenters working for smaller builders, and specializing in custom work. However, none of those feeling the loss of traditional craft skills stated that such a skill loss would jeopardize their status as a custom carpenter. The attitude was well put by a carpenter working on a custom home in Lee, N.H.: "It's easier and more efficient to install factory built components. I appreciate getting the job done, but I would really like to learn how to build windows. It's something I want to know for myself, even though it's not useful right now. Everybody I've ever worked for uses stuff from the factory." Five additional carpenters found that it didn't take much knowledge to install pre-made components, beyond the ability to use a power-driven screw driver and a level.

Evidence exists in the carpenter interviews that is similar to that found in the survey of contractors: that some degree of deskilling has accompanied the introduction of pre-fabricated structural and finish components.

TABLE V-28
EFFECTS OF COMPONENT INSTALLATION

Effect	Small	Medium	Large	Totals
Faster	4	4	3	11
Easier	6	4	1	11
Less Knowledge required	2	3	0	5
Less control	1	0	0	1
Don't lean trad. methods	4	2	0	6
More interesting	0	0	1	1

However, the carpenters interviewed showed no indication that this was taken as an overt action on the part of contractors to jeopardize their position in the labor process or labor market. Moreover, no carpenters commented that the increased ease of building with components was dramatically overshadowed by the lack of opportunities to learn traditional skills. All six carpenters who felt some skill loss also spoke of the benefits of speed or simplicity. Also no carpenter in the sample reported ever having resisted the introduction of a component to replace what was done before.

In summary, the analyses of both Braverman and Marx implicitly or explicitly hold that once the formal subordination is established, the real subordination of labor to capital will eventually follow. It seems evident from both primary and secondary data, coupled with personal experience, that eliminating the most taxing mental aspects by utilizing factory-built components is a step in this direction. Whether or not deskilling of carpenters over generations is a conscious decision or not, it is occurring.

However, the application is not systematic. The same contractors that trussed one type of roof will conventionally frame another, depending on the nature of the job. Furthermore, the evidence collected from building contractors does not substantiate the full scale transformation of the labor process by the implementation of component usage. The answers to the role of structural and finish components in the transformation of the formal to the real subordination of labor to capital will lie in the future.

c. Control

An industry organized along the lines of the formal subordination of labor to capital should exhibit simple and personal forms of control. In Chapter II it was established that complicated control mechanisms, administered by personnel departments, evolve only with the technical and organizational sophistication of large scale industry. As a result of the low level of on-site technological development and the work organization based on skilled workers, one should expect to find simple and personal forms of control exerted by housebuilders.

Although the majority of building contractors interviewed indicated that quality of construction was crucial to their market niches, few had developed formal methods of quality control. Of the nineteen contractors who answered the question concerning the basis of their quality control standards, 13 (or 68%) stated that their own

personal taste was the primary standard. The same percentage of contractors responded that either local or national building codes served as an additional, but minimum, quality standard. Nine contractors reported that they generally exceeded the codes in their building operation. Customers' tastes and the price of the job were mentioned as quality criteria, especially among those specializing in custom building. Here the determination of "what is good enough" depends upon whether the customer is willing to pay for that extra attention to detail, or is able to see it. This response corroborates the analysis of Reckman (1979) with regards to the trade aspects of custom building.[16]

TABLE V-29
BASIS OF QUALITY CONTROL STANDARDS

Standard	Small	Medium	Large	Totals
Personal taste and experience	4	9	0	13
Customer's tastes	0	2	0	2
National codes	1	5	1	7
Local codes	2	3	1	6
H.O.W. warranty	0	1	2	3
Meet written job specifications	0	2	0	2
Price of job	2	1	0	3
Knowledge of sub-contractors	1	3	0	4
High quality material	0	3	0	3
General standards of area	1	1	0	2
No answer	0	1	0	1

Other responses included the use of high quality material to construct a high quality product and utilizing the knowledge of subcontractors. Two builders indicated

that the general standards of the area, or what their competition did, was a determinant of quality. In addition, three builders said they were enrolled in the Home Owners Warranty (H.O.W.) program, administered by the National Association of Home Builders.

The large number of responses in the first category are an indication of substantial personal control. Certainly, industry-wide standards are utilized, but these codes are either structural or refer to specialty trades such as electricity or plumbing. There is no particular specific code as regards the quality of finish work. Here personal taste dominates "what is good enough." Moreover, a significant number of contractors reported exceeding the codes.

This personal approach to the development of quality control standards was reflected in the resolution of conflicts concerning quality. Only one builder reported that no conflicts arose concerning quality. The most frequent answer, "Do it my way or do it over," was reminiscent of the "foreman's empire" of the early factories. Two additional contractors were even more vociferous about enforcing their personal powers. Their response was "Do it my way or quit." Seven contractors utilized formal monetary control, either by refusing to pay .pa until the job was done correctly, or not rehiring the subcontractor who had performed inferior work.

TABLE V-30
RESOLUTION OF CONFLICTS OVER QUALITY

Resolution	Small	Medium	Large	Totals
My way or do it over	1	8	0	9
My way or quit	0	0	2	2
Don't pay until correct	0	4	1	5
Don't re-hire subcontractor	1	1	0	2
Work out with individual	2	2	0	4
Listen to carpenter	2	0	0	2
H.O.W. arbitration	0	0	1	1
No conflict	0	1	0	1
No answer	0	1	0	1

Six contractors said they negotiated the difficulties with the individuals involved, at the time the conflict evolved, as they had no explicit policy. Two other builders responded that they listened to what their carpenters said, and went along with the carpenter's judgement when they, the builders, were convinced.

Carpenters expressed similar attitudes towards jobsite conflicts concerning quality, as well as resolution of them. Seven of the carpenters interviewed stated they had no such differences with their employers. Of the remaining thirteen carpenters experiencing some jobsite conflicts, eight commented that the differences were "nothing major." Only one carpenter attributed quality conflicts to excessive pressure to work faster. Nearly fifty-four percent of the respondents indicated that the conflict was due to the contractor's or foreman's personal estimation that quality was too low. In addition, four carpenters working for small

builders claimed the conflict was based on different standards of what was "good enough"

TABLE V-31
CONFLICT OVER QUALITY
(CARPENTER RESPONSES)

Conflict	Small	Medium	Large	Totals
None	1	4	2	7
Nothing major	7	1	0	8
Quality too low	2	5	0	7
Different standards	4	0	0	4
Too much speed	0	0	1	1
Poor components	0	1	0	1

Conflict resolution responses of carpenters were consistent with those of the contractors. Eighty-five percent of carpenters said differences with contractors were dealt with by doing the job over. The four carpenters who had attributed conflict to differing standards said they "worked things out" with the contractor, although this meant doing the job over in fifty percent of these cases. The one carpenter who had said that quality conflicts arose from too much speed said he responded by slowing down. Apparently this did not create significant conflicts over the pace of work. Twelve of twenty carpenters reported no conflict over speed at all, while three respondents claimed conflicts existed only when the pace of work was "really slow." Two other carpenters indicated they were often too meticulous for their contractors, spending too much time on what the employer perceived as small details. One carpenter said a fellow crew member was "hassled by the boss because of a bad attitude towards steady work." Only two of those

interviewed responded that the foremen thought they worked too slowly in general.

TABLE V-32
CONFLICT OVER SPEED
(CARPENTER RESPONSES)

Conflict	Small	Medium	Large	Totals
None	4	5	3	12
Not unless really slow	0	3	0	3
Too meticulous	2	0	0	2
Foreman thinks too slow	1	1	0	2
Bad attitude	1	0	0	1

Conflicts arising over the speed of construction were also reconciled in a personal manner. Three of the eight experiencing conflict stated the foreman pushes, while two indicated they had to "endure he contractor's complaints." Two said they worked out the problem when necessary, and one carpenter who spent too much time on detail said he finished up quickly and moved on to the next task.

Indeed, it was found that few formal work rules existed. Those rules that existed concerned the length of the working day and a policy on lateness. Of the fourteen contractors that directly employed carpentry crews, only one indicated that there was no standard working day. Twelve of these fourteen contractors, representing 86%, indicated that the normal working day was eight hours long, excluding lunch. An additional four contractors reported that the working day is subject to extension when deadlines must be met, or that they worked longer hours during their busy

summer season. This is consistent with Marx's analysis of absolute surplus value, which characterizes the formal subordination of labor to capital. Only two of the six builders employing carpentry subcontractors bothered to set hours for them. Four of these six builders let their "subs" determine their own hours, indicating subcontractors were responsible for meeting the terms of their contracts and deadlines.

TABLE V-33
STANDARD WORKING DAY

Policy	Small	Medium	Large	Totals
No standard working day	1	0	0	1
Standard working day	4	9	2	15
Less than eight hours	0	0	0	0
Eight hours	3	8	1	12
Subject to extension beyond	1	2	1	4

The other standard policy of the housebuilders in this survey was one concerning lateness. Six contractors had no answer but left such a policy to their subcontractors. Even the two contractors who determined a standard working day for subcontractors followed a policy of self-enforcement. Two other small contractors reported they had no policy and another simply did not pay their employees for the hours they did not work. It must be reported that two of these contractors were also musicians, who employed other musicians, and were sympathetic to sleeping-in after a late night at the local clubs. The most consistent policy was to

fire an employee who was repeatedly late for work. Five contractors said they worked out reasons with the offending carpenters while three issued formal warnings. Only two contractors did not allow lateness under any circumstance.

TABLE V-34
POLICIES CONCERNING LATENESS

Policy	Small	Medium	Large	Totals
No answer - left to sub	0	6	0	6
No policy	2	0	0	2
Work out individually	1	4	0	5
Formal warning	1	1	1	3
Depends on value of employee	0	2	0	2
Acceptable if pre-excused	0	1	2	3
Don't pay for hours not worked	1	0	0	1
Fired if consistently late	2	5	2	9
Judgement of superintendent	0	1	0	1
Time clock	0	0	0	0
Not allowed	0	2	0	2

Evidence concerning contractors' control of the working day is an indicator of their control over the purchase of a carpenter's ability to work. The specification of hours of work and a policy of enforcement is consistent with the form of control exhibited in the formal subordination of labor to capital. Yet, the differing and somewhat loose, methods of enforcement of these policies speaks to the personal and simple control of the contractors in this sample. No builder reported using a time clock, and three reported accepting lateness if it was pre-excused. No contractor reported any formal grievance procedure for adjudicating

disputes over lateness. Either differences were informally worked out or the employee was fired. The literature of the labor process suggests that a greater degree and more formal type of control over the hours of labor is exerted with the emergence of specifically capitalist production.

Along with formal control over the hours of labor, the real subordination entails a greater control of the conditions of labor than is exhibited by the building contractors in this survey. As developed in Chapter II, the real subordination of labor to capital pre-supposes a mechanization of the production process which increases the productivity of those employed. It has been shown in the analysis accompanying Tables V-20, V-22, V-23, and V-24 of this chapter, that housebuilding in New Hampshire rests on a narrow technological footing. The type of machines which turn workers into their appendage and serve as a means of technical control were not in evidence on the housing sites of the builders interviewed.

The writings in the labor process tradition, especially those of Marx and Braverman, hold that instead of replacing organizational modes of enhancing productivity, machanization opens new vistas of control for capital and management. However, conscious efforts to measure and increase the levels of productivity among carpenters were not evident in an analysis of the data collected from New Hampshire builders. Four contractors had no answer, saying that they left all aspects of the actual building process to

their subcontractors. Of the remaining sixteen builders in the survey, fourteen indicated only informal measurements stating they knew how long it should take to build a house. This knowledge was based on past projects. Included among these respondents were two builders who kept track of how long it took to build even though carpentry was subcontracted, stating they would "let the subs know," or "scream and yell at the subs" if they took too long. Indeed, one such contractor interrupted the interview to scream and yell at a subcontractor who was behind schedule.

TABLE V-35
PRODUCTIVITY MEASUREMENT
(CONTRACTOR RESPONSES)

Type of Measurement	Small	Medium	Large	Totals
No answer - left to subs	0	4	0	4
Informal	5	7	2	14
Meet written specifications	0	2	0	2
Time and motion studies	0	0	0	0

The most formal measurement of productivity was that the housebuilding crew as a whole, including foremen and carpenters, was judged against written target specifications. No builder indicated that he or she measured productivity for the individual carpenter and none reported the utilization of time and motion studies to develop standards.

The carpenters who were interviewed presented answers that were generally consistent with those of housing contractors with respect to the question of productivity

measurement. Five carpenters stated that their contractors did not bother to measure productivity. These men were employed by small and low volume medium contractors. Fifty five percent of the respondents claimed their contractor's measured productivity informally, by "knowing how long it should take." Four carpenters said their work was measured against written standards. Three of the respondents in this category worked for large builders.

It is a basic theoretical premise of this dissertation that larger housebuilding companies have a greater formality in their business practices than their smaller counterparts. The two large builders indicated that while they utilized general written job specifications, they had no distinct productivity measurements. As such, the large builders interpreted their measurement of productivity as "informal." On the other hand, the carpenters employed responded that their performance was judged with respect to written standards, although not "time and motion studies." The one carpenter working for a medium firm who said his output was measured against written standards worked for a contractor who responded in the same manner as the aforementioned carpenter.

Finally, one carpenter in the employ of a large contractor stated that carpenters were placed in competition with one another in an attempt to increase productivity.[17] However, none of the respondents indicated they had ever

been subjected to time and motion studies or other types of formal productivity measurement.

TABLE V-36
PRODUCTIVITY MEASUREMENT
(CARPENTER RESPONSES)

Type of Measurement	Small	Medium	Large	Totals
None	3	2	0	5
Informal	5	6	0	11
Meet written specifications	0	1	3	4
Carpenter competition	0	0	1	1
Time and motion studies	0	0	0	0

SUMMARY

The results of the interviews with southeastern New Hampshire builders simply do not establish the existence of specifically capitalist production or the real subordination of labor to capital in the crucial areas of organization of the labor process, technology, or degrees of management control over workers. The literature of the labor process establishes that large scale industry, characterized by the real subordination of labor to capital, rests on mechanized and technologically changing bases. This is not the general case among the builders surveyed. The technological changes most apparent are changes in product rather than process. This, however, does not imply the loss of worker autonomy to the dictates of machinery pre-programmed by front office management.

Neither was a detailed division of labor in evidence. Most builders utilized all-around carpenters in addition to

a multitude of independent trade contractors. Historical chronologies of industrial labor processes imply that the consolidation of large scale industry entailed a strategy of increasing the detail division of labor and centralizing work formerly subcontracted. Such a trend is clearly not in evidence among the builders surveyed. Rather than meeting their competition by a continual reduction in cost, builders have sought to provide high quality instead. As a result, skilled workers are seen mainly as a benefit rather than a factor to be eliminated by competitive pressure.

Forms of control are reminiscent of early stages of industrial development: personal and simple. While control mechanisms were sometimes sympathetic and more often authoritarian, they frequently addressed the conditions of the purchase and sale of labor power (making sure carpenters were at work on time) rather than with the application of direct labor. Far from employing constant efforts to increase productivity, the builders surveyed did not even formally measure it. The majority held self-supervision to be an important attribute.

In short, the conditions of a capitalist, yet untransformed, labor process exist in residential construction in southeastern New Hampshire. While market conditions have eliminated the basis for totally independent handicraft production, the conditions for the systematic extraction of relative surplus value are not in existence either. This middle ground, or transition phase, is

representes the conditions of the formal subordination of labor to capital. Moreover, no contractor indicated that any crucial aspects of the technological or organizational control, inherent in the real subordination of labor to capital, have ever been implemented over the lives of their companies. Indeed, these builders seem "stuck fast" to the conditions of the formal subordination. Marx had attributed this to the dominance of small scale capitalists. The builders surveyed seem to fit this description.

To conclude the development of this hypothesis, I would like to refer back to Marx's dictum that specifically capitalist production is marked by a continual need to expand one's markets. Forty-five percent of the builder's interviewed said that their current volume was less than peak volume of earlier days. In two such instances, current volume was as little as eight percent of peak. Yet, the owners reported their businesses were in no danger of elimination from the market. Without systematic evidence concerning the need for continual expansion, one cannot support the conclusion principals of that the New Hampshire housing sector is organized under the specifically capitalist production. When this characteristic is combined with the aforementioned use of collective labor, legal and monetary control of employers over employees, and an untransformed labor process, it becomes clear that the dominant characteristics of housebuilding in southeastern New Hampshire are neither handicraft nor specifically capitalist production. This contemporary industry is

organized along the lines of the formal subordination of labor to capital.

Chapter Notes

1. Fortune (1984) p. 286 and Lemov (1984) p. 126.

2. Lemov (1984) p. 144.

3. Lemov (1984) p. 125.

4. One of the small builders surveyed told me that even this estimate is too high. It is based on the purchase of top of the line tools. I was told that one can still start a construction company with $100 of "homeowner quality" tools and a pickup truck.

5. Smith (1984) p. 33.

6. Tsipopoulous (1984) p. 21.

7. Lemov (1984) p. 126.

8. The evidence gathered in this survey seems consistent with my own experience and observation on housebuilding jobsites: that a range of different skilled carpenters are employed, they share information and tips and are both rewarded for and pushed into improving themselves. This provision of a climate and training for the increase in skills is a hallmark of the untransformed labor process: Not everyone is a master craftsman, but formal sanctions are not imposed to preclude this possibility.

9. Conditions that exist in the survey region of New Hampshire are not universal to the trade of residential carpentry. Interviews with larger western builders and personal observation of large-scale tract construction in southern California reveals a far more extensive division of labor.

   Thus, framers are subdivided into joisters, wall framers, and roof cutters [(that is, those that cut and stack rafters and sheath the roof with plywood) and roofers (or more technically, shinglers) who are specialty tradesmen distinct from roof cutters]. "Finish" carpenters are subdivided into doorhangers, baseboard nailers, window trimmers, etc. In addition, there is a role for the "pick-up man" - a skilled carpenter who can correct others' work and reconcile the existing structure with the blueprints. Every contractor or foreman I talked with out on the west coast considered a good pick-up man to be invaluable. (In California, many carpenters work on piece rate - per lineal foot - and leave out any variations (e.g., a stud which must be placed slightly off-center to accommodate a water heater) and don't pay much

attention to detail. I have not found a New Hampshire carpenter who works piece rate, so the need for this detail has not developed. This further detailed division of labor is confirmed in Sherman Maisel's study of building in San Francisco, entitled **Housebuilding in Transition.**

10. Reimer (1979) pp. 32-41, and Applebaum (1981) pp. 25-27.

11. Braveman (1974) pp. 213-219.

12. Sullivan (1980) pp. 66-71.

13. This long term decline in skills was summed up anecdotally by a California contractor, now working in Alabama who despaired that: "I've forgotten more of what my father taught me about using a rafter square than the men I hire now ever learned." This is not a new process, as de-skilling has been slowly evolving over generations. Enough mental discretion is exercised by carpenters to preclude the wholesale transformation of the labor process necessitated by the real subordination of labor to capital.

14. A crew of three carpenters (including myself) took 3.5 working days to completely construct a roof of rafters while under the employ of a small builder in this survey. A problem developed in that the walls bowed out 1/2 inch in the middle sections of a forty foot length. If the walls are not perfectly aligned, then the ridge pole of the roof will sag. The solutions to this dilemma were either: (1) let the roof sag, which was unacceptable to the quality standards of the foreman; (2) cut and scribe each of the 42 rafters individually, which would have taken so much time that all involved would have lost money; or (3) figure another solution. Choice three was arrived at by the leadman/foreman snapping a line and nailing a top plate which was perfectly aligned while I recalculated the mathematics of the rafter pitches to compensate for the additional top plate. All in all, it was time consuming but a reasonable compromise between time and accuracy, and the type of compromise which is common in traditional framing. For further elaboration, see Reckman (1979) and Kidder (1985).

    After this job I found work constructing a custom home in southern California, in which its roof was built from trusses. Although the roof was far simpler in construction than the New Hampshire roof, it was twice as long. Framing the roof took six hours rather than three days. The problem of accuracy arose when it was found that the side walls were three inches out of plumb. Although 2/3rds of the framing crew was fired

as a result, the non-plumbness of the walls had no effect on the ridge of the roof and the eventual buyer of the house was not able to see the structural defect in the walls.

This anecdotal account serves to clarify the relation between time savings and skill levels in the use of components. The erection of roof trusses was not only physically faster but removed decisions on the part of the working carpenter as to what was "good enough." Workers possessing fewer mental skills can do an "adequate" job from the standpoint of marketability, when building with structural components, compared with a highly intelligent worker using traditional techniques.

15. Dunkley (1982) p. 65.

16. Reckman (1979) pp. 76-77.

17. This is similar to the methods found by in large California housing tracts by Paul Shinoff (1977) p. 65.

CHAPTER VI

ORGANIZATIONAL TRANSITION

In this chapter I will assert that the formal subordination of labor to capital exists as a continuum. Different size builders will exhibit varying degrees of the characteristics of the formal subordination of labor to capital. The sharing of basic structural characteristics does not imply that significant differences do not exist between housing firms. Neither does it imply that a shared set of traits, corresponding with all aspects of the formal subordination of labor to capital will be found in all New Hampshire housebuilding concerns. Rather, the formal subordination is a transition stage, and firms operating within this structure can be expected to exhibit different degrees of development. As explained in Chapter IV, the methodology of Sherman Maisel will be utilized to differentiate the degrees of development. This method separates builders into three categories: small, medium, and large, depending upon the volume of production. As mentioned in the chapter on methodology, the size of Maisel's categories have been adjusted to account for the smaller scope of New Hampshire housebuiding, and to accentuate the details of the labor process itself.

Five of the companies analyzed in this study were considered small, as they built fewer than ten new houses per year. The majority of the builders surveyed were placed

within the medium category, constructing between ten and ninety-nine units per year. Previous studies have also shown thast medium-sized firms, who build from 25-99 houses per year, dominate the industry. Maisel considered the medium builder's company to be the representative firm, in his 1953 study of the San Francisco Bay Area. More recently, John M. Quigley provided census data which showed the predominant role of the medium-sized housing concern. Quigley presents data from a 1970 National Association of Homebuilders survey on the size distribution of NAHB builders. These data show that firms constructing between one and twenty-five single-family units accounted for 69.5 percent of NAHB member's volume, with those constructing between twenty six and one hundred units providing 24.3 percent of the housing stock in 1969.[1] Medium firms, building in the range of ten to one hundred homes represent sixty-five percent of the builders surveyed. Recombining the volume of housing by builder size data collected in this survey to fit the categories of the 1970 NAHB study, I found that thirteen of the twenty New Hampshire builders, or 65 percent, constructed less than twenty-five units in 1983. In addition, those building in the 26-99 range accounted for 25 percent of new 1983 dwellings. These figures are certainly in line with those published nationally by the NAHB.

The only significant deviation between my study and that of the National Association of Homebuilders in 1970 regards the large builder, producing in excess of two-

hundred fifty units. The National data showed 4.6 percent of all single-family units constructed by companies building in the 101-250 range while 1.6 percent were completed by those constructing more than 250 units. The state director of the Homebuilders Association of New Hampshire confirmed my opinion that no builder in New Hampshire reached the 250 unit threshold by 1983. Those classified as large builders comprised 10 percent of the sample, while the combined figures of the NAHB study showed that 6.2 percent of the nation's builders produced more than 100 units. While the percentage of large builders in the survey is slightly higher than the 1969 national norms, the ten percent in my survey represents only two companies. I felt the potential bias of over-representing the large firm was outweighed by the need to include at least two firms for purposes of comparison.

Data on volume of construction by builder size are not collected on the state level by either public or private agencies in New Hampshire. Persons contacted in both the New Hampshire Office of State Planning and the Homebuilders Association of New Hampshire told me such data were unavailable. Nonetheless, the small sample of contractors interviewed in this survey exhibit the basic market structure characteristics of the housing sector as a whole.

It will be shown that as New Hampshire housebuilding contractors construct a greater volume of housing they become more "business-like." However, none of the housebuilding firms studied, even the largest, have evolved

the conditions of specifically capitalist production or the real subordination of labor to capital. This hypothesis will be developed by first clarifying the unique characteristics of the small homebuilder, followed by a similar analysis of the medium and large firms.

The Small Firm

While it has been established that even small firms employ collective labor by the use of subcontractors, many of the characteristics of handicraft production exist within this sector. I am not arguing that small builders represent a modern incarnation of the guild master. Certainly, such restrictive guild regulations on employment, training, and output are not in evidence in the New Hampshire of the 1980's. However, the small builders interviewed in this study are not capitalists in the sense that their livelihood is derived from the immediate labor of others. The owner of the firm worked with carpentry tools as an immediate producer in one hundred percent of the small firms. This was unique to the small housebuilding company.

These builders perceived themselves primarily as craftsmen, rather than businessmen. One small Newmarket builder told me (somewhat tongue-in-cheek) that he really wanted to hire a "boss" so he could just work with wood. Another commented that "I'm more focussed on workmanship than on turning a profit, myself." A Barrington, N.H. builder, recognized by his peers as being among the finest

craftsmen in the state, said: "I really hate all the business aspects of contracting; I just have to do it so I can work with wood and feed my family at the same time."

The chain of command within small firms was not developed in any detail. All five small housebuilders reported that they were on the jobsite as a working foreman. The only deviation that occurred was in a single small firm that had two principal owners. Dual ownership gave a more detailed chain of command, as one principal served as working foreman with responsibility for construction itself, and the other remained in the office, concentrating on design, sales, and customer relations. This same company was the only small builder to employ a foreman other than the owner. (See Table IV-1, Appendix E). The foreman ceded responsibility when employed on the same job as the owner, and was "in charge" when employed on a separate jobsite. However, the owner visited this job at least three times per week and was responsible for all scheduling, coordination, and final inspection. The foreman would set the pace, assign tasks, and inspect work in the absence of the owner. In short, the majority of small firms are "one-man" operations whose principal owners control nearly all aspects of production.

Only one contractor reported that he was not the primary teacher of others on the jobsite. This was the sole

TABLE IV-2
RESPONSIBILITIES OF POSITIONS IN SMALL FIRMS

Responsibility	Owner	Foreman	Carpenter	Totals
Design/training	5	0	0	5
Deal with towns and cities	5	0	0	5
Jobsite scheduling and coordination	5	0	0	5
Customer relations	5	0	0	5
Hiring/firing	5	0	0	5
Set pace	5	1	0	6
Assign tasks	5	1	0	6
Evaluate/inspect	5	1	0	6
Work with tools	5	5	5	15
Teach others	4	1	0	5
Meet timetables	5	1	0	6
Estimation	5	0	0	5
Wage determination	5	0	0	5
Jobsite problem solving	5	1	3	9

case in which an owner reported that he was not his own best carpenter.

Small builders exhibited a minimal amount of attention to paper work and details of the front office, aside from the one small company which had one partner who concentrated on office work. Two of the small firms reported having no particular office space set aside. They either kept their records in their truck or did paperwork at the kitchen table. When asked about his office space, one small contractor pointed to a rather cluttered desk in the living room (The interview was conducted at his kitchen table). Two small contractors reported having a separate office space within their home. One of these firms was the one in which a partner specialized in office functions. The other was the contractor considered amongst the best in the state

who commented that he hated paperwork and built the office primarily as a showplace for customers (see Table VI-5, Appendix E). Only one small builder had an office that was open during normal business hours. The others remained on the jobsite as working foremen and conducted office related activities after the normal working day and on weekends. All of the small contractors interviewed reported spending less than forty percent of their time in the office, with three devoting between eleven and twenty percent of their working week to office duties. All small contractors indicated that their working week, when office functions are included, often exceeded forty hours. This should not be surprising when one considers that these builders are working carpenters in addition to being executives, and paperwork is done after normal working hours (see Table IV-4, Appendix E).

The office support staff of these small housebuilding firms was also minimal. No small builder in this survey reported employing a full-time, paid office staff. In every case, the builder himself performed all office functions. In only one case did a small builder receive any help in the office. Here the builder's wife took telephone messages and made appointments without pay. She also indicated that she used to keep the books, but "...got sick of it" and turned the task over to her husband (see Table VI-7, Appendix E).

Small contractors used their offices mainly for estimation and design purposes. Only two recorded payroll transactions in a physical location away from the jobsite.

Three of the five paid their employees from their truck at the end of the work week. The same breakdown was true of coordinating and scheduling. The two contractors who had set aside a separate office space in their homes reported utilizing it for these purposes. Only one small contractor indicated that the office was used for keeping books. One additional small builder reported utilizing a bookkeeping service, while the remaining three responded that they devoted time to record keeping "only when they had to" (see Table VI-8, Appendix E).

Corresponding with small office staffs and paper work being done after hours, was a minimum amount of office machinery. The three small builders without separate office space listed a phone and calculator as their office equipment. Two of these builders also said that the calculator was also used on the jobsite to calculate rafter pitches. Only one of this group even used a phone answering machine at the time of the survey. The remaining two who set aside a separate office space reported the use of general office equipment - desks, file cabinets, phone machines, etc. One small builder used a computer in his office operations. This builder confided to me that he simply liked computers, bought it to play computer games, and only later adapted it to his business. In addition, the cost of the hardware was partially defrayed by his wife,

who also utilized it in her work (see Table VI-9, Appendix E).

To summarize, the owner of the small firm in the main saw office work as a necessary evil. These builders are craftsmen who see their woodwork as primary and their business operations as secondary. They are in business to make houses first and money second, devoting time to paperwork and office operations only after t he working day. These firms more closely resemble handicraft production than larger housing firms do. The owner is an immediate producer and defines his status in terms of independence and craft pride, rather than the size of assets and profits.

The only builder deviating from this craft norm in 1983 has since evolved into the ranks of a medium-size builder. He incorporated for reasons of proper business structure, and kept more accurate records with the goal of expanding from the start. This was also the only company that exhibited any division of labor within the ownership. In addition, this was also the only small residential construction company that exhibited any form of diversification other than renovation, remodelling, or small commercial building. These three lines of work use essentially the same materials and designs as building a house. This one particular company was engaged in building a small subdivision in Barrington, N.H. This was also the only small builder that had any in-house sales effort. One of the two principals of this company handled sales as part of his job (see Table VI-10, Appendix E).

Turning to the production aspects of building, all of the small contractors indicated that they were custom builders. They specialized in building to the specifications of individual customers with whom they had contracted. When the small builders surveyed built on a speculative basis it was one house at a time, rather than in tracts or developments. An additional three small builders indicated that their operations included a significant amount of remodelling and renovation. This type of building does not lend itself to standardization, as every job is different. This lack of a standardized product affects both the nature of the labor process and the degree of development of the front office.

Custom work tends to be expensive, as one-hundred percent of the small contractors responded that they built houses that were above the median price. This, coupled with high quality workmanship as a method of meeting competition, entails the utilization of a skilled labor force. The mental/conceptual aspects of skill are crucial as differences will appear from job to job. A worker cannot simply be assigned a routine task with the assurances that no unexpected problems, requiring unique solutions, will occur. The custom carpenter must make numerous, subtle adjustments in the course of a day. This analysis is consistent with the statement of a small Newmarket, N.H. builder who said that he simply could not use unskilled workers in custom building. This is especially true in

renovation and remodelling work, where the design and construction of the structure must match what already exists, rather than a pre-planned ideal of efficiency.

Able to get enough jobs by word of mouth and reputation for quality, the small builder devotes little effort to the office. Non-standardized products and processes engender non-standardized record keeping. No effort is made to develop labor standards as the unexpected is normal in custom work. The reliance on skilled labor and subcontractors remove the need for a personnel department. Instead of making money through a solid business organization and the labor of others, the small builder earns his livelihood by devotion to quality and his own work. Unwilling to cut corners to make large profits, the small builder operates on craft pride. The sentiments of the small, custom builders of this survey were echoed by the small western Massachusetts firm whose exploits were chronicled in Tracy Kidder's non-fiction book, **House**. The foreman (Jim) of a highly skilled, collectively organized, custom carpentry firm (Apple Corps) is contemplating the construction of windowsills. This occurs even though the specifications of the architect (Bill) did not call for them, and the crew has been losing money on the construction of an expensive, custom home for Judith and Jonathan Souweine.

> The specs say nothing about windowsills. The contract would allow Apple Corps to surround all the windows with stock Colonial Casings as if the windows were pictures - to "picture

frame" the windows and leave them without sills. It's a fairly commom practice that saves a builder time. That's what Jim plans to do. This is a contract job. He assigns the task to Ned, the cabinet-maker. When the time for giving Ned his instructions comes, however, Jim can't bear the thought of their leaving a house without windowsills, and he does not want to ask Ned, of all people, to do a job wrong on purpose. Jim doesn't ask the Souweines' permission, perhaps because he fears that permission won't be granted, and anyway, how can you agree to build a house for someone and then not give them window-sills to rest their chins and elbows on? So Jim tells Ned to make sills. He does not even ask for recompense. Evidently, he doesn't get much pleasure from the gesture either.

On his next visit, walking through the rooms, Bill notices the sills right away. He sees what Apple Corps has done. He finds Ned and Jim in the living room. He thanks them. "Gotta please the architect, right?" says Ned. "No, I'm glad you're pleased."

To Jim, Bill says "It has mostly to do with taking extra care. That's the nature of quality work."

"Or of not being businesslike," says Jim. Jim adds, "This contract's wide open. There are fifty places where we could've stuck it to them."

"Oh, I'm sure," says Bill. "That's the nature of... Well, I'm sure."

Ned laughs. His shoulders shake. "We don't know how." [2]

In the writing of **House**, Kidder interviewed Jim's wife, Sandy, on several occasions. She, like others, recognized the constant compromises that must be made by the custom craftsman over what is "good enough." These feelings are also corroborated by Reckman (1979) who is also a custom carpenter.[3] Kidder brilliantly summarizes the dilemmas of

many small, custom, high quality builders: the conflicts between craft pride and market realities.

> Jim has often spoken to her about that long-contemplated reorganization of the company into something larger or at least more lucrative, and his fears that in the process he and his partners might lose control of the quality of their work. She worries too because the pursuit of quality seems to lie near the center of what makes Jim happiest, what has made him stick with this profession, and what makes him rise willingly from his bed around dawn to work on other people's property and dreams. Sandy isn't at all sure, on the other hand, that Jim and his partners could make the compromise they'd have to make to run a large and thriving construction business. "They can make mistakes, she says. "They can't make them on purpose." [4] [emphasis in original]

The Medium Firm

These compromises have been made by the medium-size builder, with the result being a far more business-like structure. In all cases but one, the owner of the medium sized construction company has ceased to be an immediate producer. The one medium builder who did work on-site operated earth-moving equipment during the excavation phase of building, but did not work with carpentry tools.

Despite laying down their tools for a more executive role, most medium builders did not spend the majority of their time within the confines of an office. Eleven of thirteen medium contractors reported regular visits to projects for purposes of troubleshooting, scheduling or just "checking in." Seventy-seven percent of medium builders

reported being "on the road" or on-site at least half of the time (see Table VI-6, Appendix E).

The chain of command expands with size as positions of authority develop between the owner and the working carpenter. Nine of the thirteen medium builders surveyed employed either a foreman, a job superintendent, or both. An additional five contractors hired a general superintendent to oversee and coordinate multiple jobsites. Two medium firms had grown to the size where they believed a construction vice president or coordinator was in order, and two companies employed office coordinators (see Table VI-4, Appendix E).

The medium contractor has established himself or herself as a businessperson, rather than a craftworker. No medium contractor lamented for the "good old days" of working with tools. Although the typical medium-sized housing contractor has quit using tools, and developed a chain of command, it should not be implied that he or she has given up control of the operation. Control of the business's operation rests primarily at the top. Owners claimed responsibility for design in ten of the thirteen firms. Owners personally took responsibility for liaisons with towns and cities in seven cases, and left negotiations concerning zoning, easements, etc., to their subordinates in only four cases. In three cases medium builders took control of the jobsite related task of inspection and evaluation. In four other cases medium builders handled jobsite scheduling and evaluation.

TABLE VI-2
RESPONSIBILITIES OF POSITIONS IN MEDIUM FIRMS

Responsibility	Owner	Construction Coordinator	General Super	Job Super	Foreman	Office Coordinator	No answer	Totals
Design/Project Plan	10	2	0	0	0	2	0	14
Towns & Cities	7	2	0	0	0	2	2	13
Banking	9	2	0	0	0	1	1	13
Jobsite scheduling	4	3	4	1	3	0	0	15
Customer relations	4	2	0	0	0	1	6	13
Supervise sales	5	0	0	0	0	0	8	13
Hire/fire	5	3	1	0	1	0	3	13
Determine wages	1	2	0	0	0	0	10	13
Set pace	1	0	1	1	3	0	7	13
Assign tasks	0	0	0	1	2	1	9	13
Evaluate/inspect	3	3	2	0	1	0	4	13
Work with tools	1	0	0	0	3	0	9	13
Meet timetables	1	0	2	0	2	0	8	13
Estimation and costing	4	3	1	0	0	3	2	13
Jobsite problem solving	1	0	1	0	1	1	9	13

For the medium builder, responsibilities are shared by numerous positions throughout the organization. Owners generally concentrate their efforts on business aspects and leave the jobsite oriented tasks (evaluation, pacing, etc.) to their subordinates. However, no clear pattern emerges from the data that indicates the majority of medium builders have made a "clean break" of separating responsibilities. This retention of personal management styles was pointed out as a potential pitfall by the National Association of Homebuilders in their residential builders manual, **Quality in Construction.**

> Most building companies operate with a fairly high degree of centralization of authority, or concentration of the right to make decisions at the top. This may be quite effective <u>if</u> the man at the top makes good decisions on a timely basis. Too often subordinates drift aimlessly because a decision has not been made promptly and subordinates can't get in, or do not want to get in, to see the top executive. For this reason and also to develop competent personnel at lower levels, it is a good idea to encourage more decentralization of authority than is actually practiced.[5] [emphasis in original]

The scattered responses regarding differing responsibilities shows a somewhat haphazard acceptance of the NAHB's suggestion for improved quality. While the medium builder still cares about quality, it is not a hands-on experience. For the medium builder quality is achieved by the executive activities of careful screening of

subcontrators, superintendents, and carpenters, rather than by direct work and supervision.

The office space itself changes as the medium builder becomes an executive, coordinator, and troubleshooter. The office becomes a place for business, rather than a multifunctional room of the builder's house. Sixty-nine percent of medium builders located their office in a building away from their home. While the remainder still continued to operate from their home, twenty-three percent, or three of thirteen, medium builders had a room devoted solely to business activities. Only one medium builder, representing eight percent of those interviewed, continued to operate from a desk in his bedroom. In nearly seventy percent of the cases, the office was open during regular business hours (see Table VI-5, Appendix E).

The separate office of the medium-sized residential contractor is generally better staffed and better equipped than that of the small builder. Eighty-five percent of the medium builders surveyed reported the employment of full time, paid office personnel. Most medium-sized contractors had rather small staffs however, with seventy-seven percent reporting a staff of less than five. This figure includes both clerical and executive personnel (see Table VI-7, Appendix E). While the firm has grown too big to be a "one person show" the decentralized structure of the large corporation, analyzed so well by Alfred Chandler[6] has yet to develop. Such personal and centralized control is

consistent with the formal, but not the real, subordination of labor to capital.

The office of the medium builder is, in general, better equipped than that of a small builder. Ninety-two percent of the medium builders indicated that their offices contained general office equipment. The sole exception was the one medium builder whose "office" was a desk located in his bedroom. In addition, nine medium-sized contractors, representing sixty-nine percent, reported that their offices contained a computer (see Table VI-9, Appendix E).

The medium builder carried out a wider range of functions in this better-staffed, better equipped office than did his small builder counterpart. Functions that the small builder accomplished from his truck, such as billing and payroll, were now done in the office. Eighty-one percent, or nine of eleven, medium firms who used the office for payroll reported this task was computerized. Jobs that the small builder does after hours, such as estimating, and design, are accomplished during the day, and at the office for the medium-sized housing contractor with the aid of a support staff. In addition, medium builders took on responsibilities from their office that small builders did not. Five of thirteen builders ran sales operations from their offices and all thirteen medium respondents indicated their office was the location for dealing with banks, as well as with towns and cities regarding zoning, land acquisition, etc. (see Table VI-8, Appendix E).

The medium-sized contractor of this study has taken the first step towards integration of his or her operations. All thirteen medium builders report some form of land development. This ranged from a small subdivision in Rye, N.H., to a large housing tract, complete with roads and sewers, in Manchester, N.H. Five of thirteen medium housing contractors were integrated forward, handling sales and customer financing of the homes they built. Little evidence of backwards integration was presented during the contractor interviews. One medium builder was part owner of a lumber yard and also owned a cabinet shop and a plumbing supply house. This type of integration is consistent with a more business-like structure, which brings the cost and availability of land under greater control, in order to expand housing production. Forward integration into sales serves a similar purpose. However, the full-scale vertical integration of the large corporation, requiring extensive and decentralized controls, is not in evidence amongst medium-sized housebuilders in New Hampshire.

Some subtle differences exist between the medium and small builders as regards production. Like small firms, medium builders reported building custom homes. This was true for ten of fourteen or seventy-one percent of medium housing contractors interviewed. However, only five of these ten "custom builders" reported building to customer specifications or designs. Nine of fourteen, representing approximately sixty-four percent, utilized standard designs. An additional six medium builders said they built multi-

family dwellings of standard design (see Table VI-11, Appendix E).

A more standardized design means fewer arbitrary decisions that must be made by the carpenter in the course of a working day. While sixty percent of small builders indicated that at least forty percent of their carpenters were considered skilled, only fifteen percent of medium builders made this claim. If one discounts those medium builders who did not answer because they subcontracted carpentry, twenty-eight percent of medium builders indicated that forty percent of their carpenter were skilled (see Table V-9).

The decreased use of skilled labor by the medium builder, while apparent, did not constitute the basis for the establishment of the real subordination of labor to capital. The level or nature of mechanization of carpentry was not significantly different than that of the small builder. The fundamental difference in mechanization was in the category of excavation equipment, as all medium builders reported engaging in some form of land development. Neither has the organizational basis of specifically capitalist production been established by the medium builder. The implementation of a detail division of labor, the initial step in the transformation of the labor process towards specifically capitalist production, is not in evidence. A review of Table V-18 shows that approximately seventy-one percent of the medium builders who directly employed

carpenters hired all-around carpenters. The remainder of medium builders who hired carpenters divided labor only into the categories of framer and finish carpenter.

The main difference between medium and small builders is in business organization. Medium-sized housebuilding firms have been removed from the tradition of handicraft, as the owner has ceased to be an immediate producer. He or she makes his or her living primarily from the ability to organize the labor of others. Yet this break is not complete. Power and decision making are still centralized, often with the owner. Although not on the jobsite to work with tools, the owner still frequently visits actual work in progress. Final decisions on "what is good enough" still rest at the top for the medium housebuilder.

The Large Firm

Housebuilders who have produced more than one-hundred houses per year in 1983 have established the conditions of capitalist production to a greater degree than companies operating below this volume.

Like their counterparts in the ranks of medium builders, owners of large construction companies are primarily executives. Both large construction companies reported that they had an executive who devoted his time solely to office work. One of the large builders had two executives. One spent all of his time in the office while the other divided his work week between office work,

visitations of multiple job sites, and supervision of a family-owned lumber yard (see Table VI-6, Appendix E).

The chain of command gains complexity in the large building firm, and those in positions subordinate to the owner are delegated more responsibility. Both large firms in the survey had multiple vice presidents, including one for construction. This more sophisticated corporate structure is, in part, necessitated by the large firms' diversification. In viewing the construction sector itself, it was found that office coordinators, general superintendents, and job superintendents were employed in both large firms. One of these two builders reported that a foreman was employed in addition to the job superintendent while the other said that foreman and job superintendent were the same position in their company (see Table VI-4, Appendix E).

In addition to a broader chain of command itself, decision-making power was more dispersed along the chain. In general, decisions regarding finance and politics were centered in upper management. This includes dealing with cities over zoning, land acquisition, etc., and banking. Other financial aspects centered at the top were job costing and wage determination. Politics played a large role in the working lives of the owners of both large housebuilding companies. One owner was deeply involved in a class action suit regarding exclusionary zoning practices at the time of the survey, and the other currently serves in the New Hampshire State Senate. In addition, the planning of new

projects was done by the owners themselves in both large firms.

On the other hand, most day to day jobsite decisions were left to the field management. Discipline and the assignment of tasks rested with the job superintendent in both cases. Responsibility for evaluation and determination of construction speed (in the form of pacing and meeting timetables) was split between the general superintendent and job superintendent. Neither general superintendent worked with tools. The highest ranking immediate producer was the foreman, who in one case was also job superintendent. Foremen, along with lead carpenters, were responsible for teaching skills to other carpenters employed.

A clear pattern emerges from the limited data on large builders: The instances of multiple responsibility, so prevalent for the medium builder, are largely absent. This is replaced by a more clear-cut division of responsibility. Subordinates in field management have top responsibility for their jobsites. Top management concerns itself with finance, planning and politics. Both of these patterns are evidence of the "clean break" advocated by the National Association of Homebuilders. The owner has clearly delegated responsibility. This is a far closer approximation to the structure of large industrial corporations than the smaller builders in this study have exhibited.

TABLE VI-3
RESPONSIBILITIES OF POSITIONS IN LARGE FIRMS

Responsibility	Owner	VP	Outside Firm	General Super	Job Super	Foreman	Totals
Design/Project plan	2	0	0	0	0	0	2
Towns and cities	2	0	0	0	0	0	2
Banking	1	1	0	0	0	0	2
Scheduling	2	0	0	0	0	0	2
Customer relations	0	2	0	0	0	0	2
Supervise sales	0	1	2	0	0	0	3
Estimation and costing	1	0	0	1	0	0	2
Determine wages	1	1	0	0	0	0	2
Hire/fire	1	0	0	2	1	0	4
Evaluate/inspect	0	0	0	1	1	0	2
Set pace	0	0	0	1	1	0	2
Assign tasks	0	0	0	0	2	0	2
Discipline	0	0	0	0	2	0	2
Work with tools	0	0	0	0	0	2	2

Not surprisingly, both large builders interviewed operated from large, modern, well-equipped offices (see Table VI-5, Appendix E). There was, however, a considerate difference in the size of the two office staffs. The largest builder, located in urban Nashua, employed an office staff of sixty-five. The other, located in Atkinson, had an office staff of five. Despite the discrepancy in staff size, a similar number of functions were performed in the office of both large builders. The main differences were that the smaller of the two met with customers in a model home, and had no in-house facilities for drafting and architecture. Instead, an outside firm was employed. The larger firm had centralized these functions in the office. Both large builders reported selling houses through separate real estate companies, although the larger one did sell commercial property. These sales workers were responsible to the vice president for commercial operations. In other aspects, the same functions were performed in the office for both large builders (see Table VI-8, Appendix E).

Both large builders have computerized their office operations. The Atkinson builder told me that by expanding office space and computerization, he was able to meet the "constantly expanding explosion of paperwork" without hiring additional staff. This signifies the solidifying of capitalist practices. However, neither of the two builders said their computers were linked to their housebuilding equipment. The technical control necessary for the

establishment of the real subordination of labor to capital was, once again, not in evidence (see Table VI-9, Appendix E).

The larger builder runs a highly integrated enterprise. He told **Business NH**, in a 1984 interview, that only thirty-nine percent of his company's income was derived from new housing. [7] Both large builders act as general contractors for commercial and industrial jobs, including shopping centers and industrial parks. Both companies saw these larger projects as parts of integrated communities. One of the large builders was in the process of closing a deal on a large condominium project with commercial space at the time of the interview. This project coincided with the development of a high-tech industrial park in Haverhill, Massachusetts by a "**Fortune** 500" computer company.

The large firms in this study developed projects from raw land to approved plans and completed communities. The smaller of the two companies sold approved sites to other builders while the larger developed only its own land. Both companies had real estate operations. The larger one sold only commercial properties in-house and sold residential properties through a large Boston agent, with whom he had a long-standing agreement. The other large builder sold houses via a family-owned real estate corporation, organized under the same holding company as the housebuilding firm. This holding company also owned a large lumber yard which manufactured structural components (trusses) as part of the operation (see Table VI-10, Appendix E). Perhaps one

reason for the wide variation in size of office staffs was that the larger company had centralized all of its separate companies' operations in a single office, which the figure reported to me represented. On the other had, the Atkinson builder gave only figures for the housebuilding company, located in a geographically separate space, and not employees of the holding company as a whole.

Differences in production also separated the large builder from the others in this study. Both large builders explicitly indicated that they did not construct custom homes. One indicated that he zeroed-in on a particular new market: the rising executive family with two incomes, and fewer than 4 children. The housing style was described as "contemporary in a traditional area." This "expandable cape" was described as a standard design, with flexible variations, that is as cheap to build as a low-cost ranch house, but sells for a higher price. The other large builder said he builds houses in all price ranges except custom luxury homes: "There is little profitability in it. We are in the production business. There's always that guy who wants to make one or two houses a year and make a week's pay. We can't compete with him."[8] This builder indicated that ninety-five percent of the houses built by his company used the same basic plan, with variations.

Such standardization in design affected the degree of skill needed in the carpenters employed. The more standardized the basic design, the fewer options the working

carpenter needs to decide upon. This means a large production builder can employ a lower percentage of skilled carpenters without a significant decline in the established quality standards. Both large builders indicated that "quality for the price" was important in achieving and maintaining their respective shares of the market. It should be noted, however, that these standard designs are not the equivalent of interchangable parts in manufacturing. Wood is still a less perfect material than metal, subject to warping, dimensional variation and cracking. The carpenter must still decide how and when to use or not use a particular piece of building material, and must be able to build structures that are plumb and level. To use the words of economic historian Nathan Rosenberg,[9] a substantial amount of "fitting" must still take place. Also, these standard designs are subject to variation in both cases. Each large builder reported deriving "five or six" separate models from each design. These variations call for judgement on the jobsite.

The large Nashua builder indicated that he employed "mostly nail bangers," with only twenty percent of the workforce of carpenters possessing developed conceptual skills. The other large builder said half of his carpenters fit his definition of a skilled craftsman. This however, represented a break from his custom building past. When asked about any substantial changes in his use of skilled carpenters, this large builder stated that he now employs fewer skilled carpenters. This was due to the increased

size of his operation and use of components. This builder also indicated that he had no immediate plans for altering the skill composition of his carpentry force.

This seems to be a clear and explicit example of the entrenchment of the structural conditions of the formal subordination of labor to capital. The largest builders are production builders; they are in business to make money. When asked why the cost of housing was rising, the operations officer of the largest builder told me that he had to admit that his company's rising profit margin was a factor. The office operations of these companies were modern. Records were kept, standards of cost and quality developed, responsibilities were delegated among subordinates. The companies were integrated into multiple areas of building. Cost efficiency was achieved on the jobsite by standardization of design and a reduction in the number of skilled carpenters, as compared to custom building. The large builder's livelihood came from the ability to achieve this business organization, not from his skills as a master carpenter. The basis of organization is capitalist, not handicraft.

Summary

The observations of builders in New Hampshire in 1983 are consistent with those found by Maisel in the San Francisco Bay Area in 1949, save two. Maisel reported that nearly all firms in his study, even small builders, employed

carpenters organized by the United Brotherhood of Carpenters and Joiners of America. No New Hampshire builders interviewed for this study hired union carpenters. In fact, there was a considerable amount of hostility towards unions amongst certain New Hampshire housing contractors. Five builders, including one of the large ones, told me that they would rather shut down all operations than hire union carpenters. While the reasons behind varying attitudes regarding unionization is the subject of another study, the difference is striking and deserves mention.

The other fundamental difference between Maisel's earlier study of California building and this one regards the detail division of labor. Maisel had found evidence consistent with my own observations. In **Housebuilding in Transition**, Maisel stated:

> It is in the production process that some of the most conspicuous differences between the small- and the large-size builder may be seen. The source of these differences is size: with increased scale, builders can specialize the functions of their labor. The larger size of operations does not merely permit the employment of more efficient methods of production - it forces them. In the sphere of labor utilization, the big builder is forced to adopt mass-production industrial methods to compensate for the lack of highly developed individual skills among his workmen....If these men were required to perform all types of carpentry, as do carpenters on smaller jobs, their efficiency would be extremely low. To keep their labor costs down and still obtain sufficient labor as needed, the large firms must resort to a breakdown of tasks. In effect, they "de-skill" jobs.[10]

In a passage that sounds strangely Marxist for a neoclassical economist, Maisel asserts that the inevitable deskilling of industrial methods forced upon former craft producers had come of age by the late 1940's. These characteristics were already embodied in techniques of the large Bay Area builder.

Yet, despite the passage of some twenty-three years, such industrial methods have not been "forced" upon even large builders in New Hampshire. As noted in Table V-18, neither large builder employed any substantial detail division of labor. One large builder employed mostly nail bangers and divided jobs into finish and framing, but the other utilized all-around carpenters. This is not systematic evidence of the transformation of the labor process. Moreover, neither large builder indicated plans for future deskilling. Many substantial changes were witnessed in the organizational structures of the firms surveyed as construction volume increased. However, none of the changes were great enough to constitute a material basis for the real subordination of labor to capital.

The small builders surveyed in this study were primarily craftsmen whose formal business organization allowed them to practice their craft independently. These contractors specialized in expensive, custom-built homes, operating on a time and materials basis in forty percent of the cases. Building high cost housing partially freed them from the competitive dictates of reducing unit cost.

Building high quality, non-standardized homes necessitated employing physically and conceptually skilled carpenters and subcontractors. In contrast to the small builders jobsite quality, a distinct lack of attention was paid to office and executive functions. Offices in general were poorly equipped and located in the builder's own home or truck. Power was centralized in the person of the builder and a full-time paid support staff was a rarity. In short, the organizational conditions of those small builders I observed closely approximated those of handicraft production.

Medium builders have made a transition into a more "businesslike" organization. While still focusing on custom building, medium-sized housing contractors have ceased to be immediate producers. Compromises have been made on the jobsite, and advances have been implemented in the office, as profitability has displaced craft pride. The offices of the medium builders were better equipped and staffed than those of their smaller counterparts. More functions were performed, and they were accomplished during business hours. Moreover, these companies were integrated backwards into land development in all cases, and often forward into sales. However, there is no support to the contention that medium builders have really subordinated labor to capital, as control of the immediate point of production is not in evidence. A technical division of labor beyond framer and finish carpenter was not observed, nor is there a standardized assembly process which would allow the widespread use of operative labor.

The same observations can be made concerning the limited number of New Hampshire large builders. Both contractors oversaw efficient, integrated businesses which were well staffed and supervised by multiple levels of professional management. However, the two large builders stated that on the jobsite the detail division of labor remains low. Skilled carpenters were still called on to exercise discretion on a series of tasks, many of which required substantial amounts of "fitting." Neither of the largest contractors expressed intentions to alter the characteristics of the labor process by consciously and systematically "deskilling" their workers, or to replace skilled carpenters with operatives.

In the absence of such a transformation, one can only conclude that even the largest builders in southeastern New Hampshire have not transformed their respective labor processes to the degree necessary for the implementation of the structures of specifically capitalist production. In other words, they are "stuck fast" to the formal subordination of labor to capital.

Chapter Notes

1. Quigley (198) pp. 371-372
2. Kidder (1985) pp. 237-239
3. Reckman (1979) pp. 76-77
4. Kidder (1985) p. 260
5. Evans and Smolkin (1974) p.4
6. Chandler (1977) especially chapters 5 and 12-14
7. Smith (1984) p. 34
8. Smith (1984) p. 34
9. Rosenberg (1972) pp. 90-95.
10. Maisel (1953) pp. 113-114

CHAPTER VII

RESISTANCE AND CONSENT

This final empirical chapter seeks to explore the potential reasons behind the apparent lack of either individual resistance or organized class struggle in the residential sector of New Hampshire construction. The analysis of class struggle has long been seen as an important end in-and-of itself within the Marxian tradition. Critics of Braverman, from Aglietta to Zimbalist, have pointed out the shortcomings of labor process analyses that are devoid of explicit studies of class conflict. New social historians, such as Gutman and Montgomery, have based an entire stream of labor history studies on the influence of cultural and workplace events upon workers' consciousnesses. As mentioned in Chapter II, Andrew Herman holds that any proper analysis of the capitalist labor process must account for the conflict between wage labor and capital.[1] The degree to which the conditions of the labor process in housebuilding have engendered a conflict between carpenters as wage workers and building contractors as capitalists will be developed in the following pages.

If construction of housing in New Hampshire were systematically marching towards specifically capitalist production, one would expect organized forms of class struggle to appear. The evidence presented in this study indicates that neither specifically capitalist production

nor organized resistance have occurred. The literature of the labor process reviewed in Chapter II traces the parallel development of capitalist production and class struggle. That is, the creation of the conditions of large scale industry also create worker resistance. However, instances of concerted action on the part of carpenters to resist the directives of their emmployers are rare. Only three of twenty housebuilders reported ever having one of their jobs affected by an organized walk-off. All these actions were on a small scale. In one instance, six members of a framing crew quit in solidarity with a fired employee. In another, a framing subcontractor walked off a job, taking his three-man crew with him.[2]

Nine builders reported "subs" or crews walking off jobs in individual actions only and eight of twenty, or forty percent of all contractors interviewed, reported no job actions whatsoever.

TABLE VII-1
JOB ACTIONS

Action	Small	Medium	Large	Totals
None	3	5	0	8
Individual	2	5	2	9
Organized strike	0	3	0	3

Only two carpenters reported ever "walking the picket line." Both of these respondents were former union members who had been involved in strikes during their tenure with the UBC. Neither had struck their current employer. Five

said they had been laid off and three said they were terminated at the end of a particular job. All of the carpenters changing jobs in this matter accepted the casual labor market relations as "just part of the trades." One carpenter walked off the job demanding higher wages and more responsibility. This was an individual action, and he quickly returned when the contractor met his demand.

The lack of organized job actions should not imply that relations on the residential jobsites are always harmonious. It just implies a lack of organized resistance. The most common reason given for job actions was conflict over quality. Being told "do it my way or quit," two carpenters and two subcontractors quit. Three contractors reported that their carpenters left due to personality conflicts, while three additional builders said carpenters left because the work pace was too fast. This is evidence of the personal nature of employer-employee relations in the New Hampshire housebuilding industry.

This personal approach was also indicated by contractors, when asked how they resolved job actions. Five contractors merely fired the employees and replaced them. Three builders reported that the employee quit. When dealing with subcontractors involved in job actions, four builders stated that they simply paid-off the subcontractor for work completed. In one such case, the subcontractor was unable to complete the job due to unavoidable scheduling delays on the part of a large builder. The subconstractor and large builder parted cordially after negotiation and the

"sub" was re-hired on a later job. In other instances, the builder and subcontractor permanently severed ties. In three other cases, builders reported negotiating a settlement. Otherwise, it was individual action on the part of either employer or employee.

TABLE VII-2
JOB ACTION RESOLUTION

Resolution	Small	Medium	Large	Totals
Employee quit	1	1	1	3
Employee fired	0	4	1	5
Subcontractor paid-off	2	1	1	4
Negotiated	0	3	1	4
Change in work rules	0	0	0	0
Unionization	0	0	0	0
No answer	3	5	0	8
Total Job Actions				24

In no instance did a job action lead to unionization. In the one instance involving the UBC, the builder hired a non-union subcontractor to replace the one who had caused the problem. The union took no further action in this case, according to the builder. Neither did job actions result in formal changes in work rules. This should not be surprising as it was established in Chapter V that there are few work rules to begin with. Indeed, there were no conflicts over the most formal rule, the length of the working day. Eleven of the fourteen contractors who directly employed carpenters, representing seventy-nine percent of this group, claimed they had no conflicts regarding productivity. Only one fired a carpenter, and this was for low quality, not

speed. One was simply told to "do it my way or quit" and another quit after negotiation.

Fourteen of the twenty carpenters interviewed said they had quit a construction job in the past, including all carpenters currently employed by small housebuilders. Half of the carpenters working for medium contractors reported quitting, with only one employee of a large builder so indicating. The most common reason given was that of "personal differences." Nearly twenty nine percent quit because the quality standards of their employer were too low. Quitting for reasons of low wage or poor working conditions, the typical American business union issues, were rare. These, and other responses are reported in Table VII-3.

TABLE VII-3
CARPENTER REASONS FOR QUITTING

Reason	Small	Medium	Large	Totals
Personal	6	3	0	9
Low quality of employer	3	1	0	4
Working conditions	2	0	0	2
Low pay	0	0	1	1
Work too dangerous	1	0	0	1
No change to increase skill	1	0	0	1
Quit the union	0	2	0	2
Total Quits				20

Carpenter and contractor data on quits and turnover can be interpreted to show either the casualness of the labor market, or the arbitrary and personal nature of management, by using the concept of the "exit-voice trade off."

Freeman and Medoff (1984) argue that the presence of a union reduces quit rates in general by providing a formal mechanism to resolve disputes through discussion and arbitration. In the absence of such union-sponsored procedures, quitting is the prime method of conflict resolution. In addition to supplying data which indicates that the presence of a union can reduce quits by as much as sixty-five percent,[3] the authors develop two fundamental reasons for the union/non-union dichotomy. Freeman and Medoff contend that the union voice reduces exit behavior by providing formal grievance procedures and a seniority system. Grievance procedures increase job tenure by providing redress from arbitrary management decisions while seniority systems link promotional possibilities and protection against lay-offs to "staying with the company."[4]

One must be careful about applying the union voice argument directly to the building trades. The authors themselves state that unionism has different effects on different sectors, and the effect of the union voice in construction is virtually non-existent.

> The lack of an exit-voice tradeoff in construction (where unions raise wages greatly) reflects the nature of construction work. In this industry union workers obtain short term jobs with different contractors at the union hiring hall and are tied to their occupation rather than to their employer.[5]

In fact, Freeman and Medoff's data show that unionism reduces tenure in the construction industry by one percent.

This argument can neither be substantiated nor rejected by the evidence presented in this study, as no union workplaces were surveyed. However, it is possible to draw the conclusion that the lack of a voice increases the instability of employment. If no formal mechanisms exist to mediate the arbitrariness of the owner, then quitting becomes an option worthy of consideration. The data seem to support this. Fifty-five percent of the contractors interviewed insisted on "my way" as the method of conflict resolution concerning quality. Seventy-percent of carpenters reported quitting and sixty-four percent of these cited "personal" reasons. Quitting is a viable option and the casual nature of the labor market means that quitting does not burden the carpenter with a checkered past of employment instability. It is expected as "part of the trades" and does not automatically preclude the job-seeker from potential employment.

It is a somewhat difficult process to explain the lack of class struggle by the evidence gathered in these surveys alone. Much of the answer, in my opinion, lies in the development of ideology of individualism. While crucially important to a complete understanding of working class resistance and capitulation, such data were simply not gathered in this survey. The collection of such data would be a broad social study in-and-of-itself, and that would far exceed the scope of this dissertation.[6]

There are, however, reasons embodied in the nature of the labor process of New Hampshire housebuilding itself

which partially explain the lack of class struggle on the basis of individualism. The literature of the labor process reviewed in chapter two traces class struggle in part to the attempts to habituate workers to the dictates of capitalist production by organizational means. Yet, the deskilling through the application of a strict detail division of labor, as well as the tyranny of close supervision, were not techniques utilized by builders interviewed in this study. As reported in Table V-14, contractors provide incentives for carpenters to increase their skill levels, if not making increased skill development a basic condition for employment. Moreover, ninety-four percent of the contractors who employed carpenters felt the ability to do high quality conceptual and physical work while working independently was an important benefit to their operations. In short, the skills needed to "do the job" properly are also skills which can make a life of independence as a small contractor a realistic option.

Fifty-five percent of the twenty carpenters surveyed said they have worked independently, either as a general contractor, or a subcontractor. Six of these eleven had hired other carpenters when they worked independently. Moreover, ten carpenters indicated they wished to set out on their own in the future. Half of those who did not desire a future status of independent contractor gave no reason as to why, while half said they did not want the headaches and late hours of their boss. All but one of these respondents

worked for contractors who built fewer than twenty homes. The development of craft skills needed for independence and observation of the trade, and business proficiency needed for successful operation are both accessible to the working carpenter. Both the craft skills and decision making capacity learned on the job help mediate resistance among carpenters, as well as contractors, who will take steps and make concessions to retain valued and skilled employees.

No contractor formally measured productivity, instituted time and motion studies, or utilized a time clock. No conscious efforts were made to deskill workers through the creation of narrow job classifications, and no building contractor reported ever using a wage cut. The literature of the labor process, as well as the broader writings of labor history, accentuate these actions on the part of capitalists as ones which have triggered resistance on the part of workers.

The complex, dialectical relationship between workers and machines which characterizes large scale industry was not apparent among the builders and carpenters studied in this dissertation. Drawing on the work of Bright, Harry Braverman analyzed the deskilling involved in the application of fixed-cycle and automatic machinery. This was but a modern application of Marx's idea that large scale capitalist industry turned the worker into an appendage of the machine. Both Marx and Braverman held that the development of such machinery causes working class

resistance, and that mechanization was employed as a strategy to counter such action.

However, such technological relations were not in evidence New Hampshire residential job sites. The nature of the machinery employed facilitated, rather than destroyed, the conceptual and physical skills of the carpenter. Moreover, carpenters own many of the tools used in their daily operations. Perhaps a lack of class struggle has influenced building contractors' strategies of mechanization. Certainly, no contractor indicated that he or she mechanized in order to overcome organized or unorganized resistance on the part of his or her employees.

Organized class struggle in the house building sector of New Hampshire construction remains at a low level due largely to the conditions of both labor markets and the labor process. The casual nature of construction employment in general, combined with the lack of a union voice, make quitting a viable option. Employment with another contractor need not be jeopardized by past terminations, and independence was seen as the goal of half the carpenters surveyed. Employers are willing to make concessions to keep valuable skilled employees, yet at the same time retain arbitrary power. One medium contractor, in fact, described the organization of his business as a "benign dictatorship." When asked about quit rates and turnover he commented: "I'm good to my men, but if they don't like the way we do things they can go someplace else. People quit all the time, and

sometimes I fire them. You can't take it too personally. After all, this is a business."

This reflects the general characteristics of the formal subordination of labor to capital. Firms are interested in profits and control the wage laborers in their employ through monetary means. However, efforts to systematically control the point of production through technological or organizational means were not in evidence. Opportunities to increase one's skills through individual effort, the viability of independence within the trades, and a relatively high starting wage all contribute to the dearth of organized resistance on the part of New Hampshire house carpenters.

Chapter Notes

1. Herman (1982) p. 13.

2. The third case of an organized walk-off occurred when the commercial operations of a medium builder, operating in Massachusetts were struck by the UBC. This builder had hired a union subcontractor who did not pay his crew, and the union picketed the entire job as a result. Although commercial building in Massachusetts is not immediately relevant to New Hampshire housebuilding this incident is interesting in that it is the only case of union opposition to the practices of a New Hampshire housebuilder.

3. Freeman and Medoff (1984) p. 96.

4. Freeman and Medoff (1984) pp. 103-107.

5. Freeman and Medoff (1984) p. 98.

6. I would like to thank my wife, Valarie Klitgaard-Ellis, for reminding me of the importance of this subject, and for her understanding of my reluctance to treat the matter herein.

CHAPTER VIII

CONCLUSIONS

In Chapters V through VII I have examined the existence and degree of development of the subordination of labor to capital for the housebuilding industry in Southeastern New Hampshire. Empirical data for this study were collected by means of in-person interviews with both carpenters and building contractors, along with telephone follow-ups. This in-depth survey focused upon the nature of work organization and technology, as impacted by the market structure of the residential construction sector. In this concluding chapter I will summarize the results of my major hypotheses, infer general principles, and examine questions for further research.

Summary of Major Findings

Results from interviews with building contractors and working carpenters support the contention that the formal subordination of labor to capital is the basis for the contemporary organization of the residential construction sector in Southeastern New Hampshire. On the other hand, evidence which would lend credibility to the conclusion that New Hampshire housebuilding is organized under the principles of specifically capitalist production, or the real subordination of labor to capital, is sparse or non-existent. To establish the existence of the formal

subordination one must show the employment of collective labor and the legal and monetary control of capitalists over workers. In essence, this entails the establishment of the relationship of wage-labor and capital. However, the real subordination of labor to capital requires the systematic transformation of the labor process on the foundation of technological and organizational control by the capitalist. In other words, this labor process would be characterized by formal control mechanisms, rigid job categories coinciding with the separation of conception from execution, and a technology which exacerbates the reduction of workers' skill by embodying the conceptual aspects of work into the very design and operation of the machinery.

The worker under the regime of the real subordination of labor to capital is dependent in a two-fold sense. He or she is bound not only by the legal and monetary relations of wage-labor and capital, but is also dependent upon his or her employer in the process of transforming raw materials into useful objects. Evidence of such a systematic transformation is missing from residential construction in New Hampshire. Employment of collective labor entails the embodiment of the knowledge of the whole project in the collective group, rather than the individual. This was accomplished by the employment of specialty trades as subcontractors, in addition to the direct employment of carpentry crews.

These carpenters and "subs" had legally contracted with the builders surveyed in exchange for wages or monetary payments. The decision to render final payment or continued employment for carpenters and subcontractors rests with the owner of the housebuilding firm. While the housebuilders surveyed in this study have shown the systematic application of the legal structure of wage labor, they have not taken similar steps as regards control of the labor process. The details of how to do the job were left to those hired in nearly all cases. In only one instance did a housebuilder control any aspect of a subcontractors work, and that was the speed of work. More commonly the builder simply communicated the requisite standards, coordinated and scheduled the various trades, and paid the subcontractor upon final inspection. Such formal "checkbook control" is consistent with the principles of the formal, but not the real, subordination of labor to capital.

Those owners of housebuilding firms who directly hired carpenters reported that they preferred to hire those who possessed conceptual as well as physical skills. Premiums were placed on the ability to work independently and solve problems, while doing high quality work. Both carpenters and contractors indicated that skilled work entailed the unity of brainwork and physical dexterity. Moreover, builders advocated that carpenters take measures to increase their own skills, and provided incentives to do so in the form of higher wages and more challenging tasks. Carpenters responded that independent work, thinking, and reliability

were all key criteria for advancement. Such efforts by carpenters would be wasted if they were channeled into repetitive jobs within a minutely refined technical division of labor. However, no such division was reported. The finest fragmentation of the job of carpentry was the division into categories of "framing" and "finish work." Moreover an overwhelming majority of house builders did not even make this distinction, but rather employed "all-around" carpenters.

Organizationally this is an untransformed labor process. One would expect an increasing dependence of workers of the industry was based on the real subordination of labor to capital, not the advocacy and existence of independence that was observed. The continued use and development of all-around, skilled carpenters, not systematic efforts at de-skilling, characterize the housebuilding industry in New Hampshire.

This is not to argue that organizational control is not exerted by building contractors. However, this control is informal and personal. "Do it my way or quit" was the primary method utilized by employers in resolving conflicts over quality of speed. Only one builder reported any kind of formalized arbitration mechanism. The only formal work rule found to approach universality was the length of the working day, and this was subject to extension due to pressures of weather, closing deadlines, and scheduling conflicts. The lengthening of the working day, or absolute

surplus value, once again, dominates the organizational structure of the formal subordination of labor to capital.

The strategy of relative surplus value, which characterizes the real subordination of labor to capital, rests on an advanced technological foundation. The productivity advances needed to reduce the value of labor power, by cheapening wage goods, are based on systems of machines under the control of capital. These systems can be used by hired managers as a method to break workers' control over the limitation of output. Management control over the rate of output is necessary to increase productivity, and to impose a system of social control which would reduce employee resistance to further attempts to increase productivity.

Evidence of such an effort is missing from this study. Only ten percent of the contractors interviewed had any formal attempt to measure productivity, let alone make systematic and formal efforts to increase it. In addition, the types of tools and equipment used in New Hampshire residential carpentry did not aid this process of the deskilling of workers to enhance management control over productivity.

Only one builder reported the use of the type of fixed-cycle equipment necessary to remove the conceptual aspects of work from the carpenter. In addition, this piece of equipment was employed in a components plant and not on the residential job site. All tools and equipment used on the job entailed the brainwork and physical ability of the

working carpenter to properly set up and execute the job at hand. Moreover, employers did not enjoy unequivocal ownership of the means of production, which would assure the workers' dependence found in the real subordination of labor to capital. All carpenters owned the hand tools they regularly used, a majority owned their own power hand tools, and forty-five percent possessed their own stationary equipment. No contractor said he or she mechanized to break the control of workers over output.

Some conceptual deskilling did accompany the introduction of pre-fabricated components. However, contractors listed time savings and a reduction of expense as the primary motivations for the use of components. While a few carpenters lamented the lack of opportunities to learn techniques they said that they would never be able to use, the great majority found this technological substitution made their work easier. While this tendency does point towards deskilling, it is not a substantial enough part of the entire process to conclude that it is the basis of the real subordination of labor to capital. In short, the organizational and technological characteristics of the New Hampshire housebuilding industry point only to the formal subordination of labor to capital.

However, this structure of industry has long been cast as a transition stage and must be measured in degrees, rather than absolutes. Smaller companies closely approximate a handicraft organization. Owners are generally

their own best carpenters and most see working with tools, to create a use value of beauty, as a higher priority than the accumulation of wealth. However, they are constrained by both modern advances, such as electricity, and the broader market system. Learning and providing these skills would be inordinately expensive, so even the smallest of builders employ collective labor through the network of subcontractors.

As volume of housing construction rises the owner puts down his or her tools, makes the requisite compromises on quality, and stays in business primarily to make money. As volume grows so does the size of the office staff and the delegation of responsibility. However, even the largest of builders surveyed did not transform the labor process to the degree necessary to achieve the real subordination of labor to capital. The more sophisticated operation of the larger builder concentrates on marketing, diversifies into land development and commercial construction, but does not fundamentally alter the labor process in its residential operations. Designs may be more standardized, and the percentage of skilled carpenters may be lower. Yet even the largest of New Hampshire builders did not employ army of unskilled workers, installing interchangeable parts, who were closely supervised by many layers of front-line production managers. The "planning department" of these large builders organizes future projects, but not the details of the labor process. For Frederick Winslow Taylor the planning of process was integral for his schemes of

productivity-enhancing by management control. Without such systematic planning and transformation of the details of the labor process these large builders, as well as the smaller firms, remain organized under the principles of the formal subordination of labor to capital.

Given the absence of the rigid structures of labor control that accompany the real subordination of labor to capital, it is not surprising to find a lack of organized resistance in the housebuilding industry. In addition to scattered jobsites and relatively small crews, the nature of the work fosters independence. Learning the generalized set of skills needed to do the job of carpentry also provides a carpenter with the ability to set out on his or her own. These traits, in combination with the personal nature of management and a casual labor market make "moving on" more attractive than a prolonged organized struggle. But beyond this, carpentry remains a "good job" characterized by the ability to unite conception and execution, freedom from pervasive supervision, and the chance to advance through the acquisition of skills. These features may well serve to mediate class struggle to a greater degree than the characteristics of the labor market. Indeed they may well overcome both the inherent dangers of the work and the personal traits of owners and managers.

This is not the first case study of the labor process, nor is it the first detailed study of carpentry. However, I have attempted to add to the growing literature of the labor

process by arguing that residential construction in Southeastern New Hampshire is organized under the principles of the formal subordination of labor to capital. To my knowledge no other person has argued that this type of subordination is the basis of organization for a contemporary industry. Heretofore the concept of the formal subordination has been used solely as a theoretical prelude for the conditions of the real subordination of labor to capital, or employed as a historical stage that has been superceded by the development of specifically capitalist production.

Understanding the organization of residential construction in this manner should be an important step in linking the conditions of the labor process with the more generalized conditions of valorization and accumulation. Such an effort has been called for by the more sophisticated European writers such as Elger and Palloix. While Edwards, Gordon, and Reich have increasingly accomplished this linkage in their passage from labor market segmentation to the social structure of accumulation, their analysis of the residential construction industry still remains out of place. The casual labor markets, high rates of turnover and preponderance of small construction companies are characteristics of the secondary labor market. On the other hand, the high levels of conceptual and physical skill, the ability to advance oneself in the trade, high wages and independence are generally attributed to the upper tier of the primary market. These authors seem to implicitly assume

the real subordination in their analysis. By placing residential construction outside of this sphere it becomes easier to explain this dichotomy.

Segmented markets were developed only after the transformation from the formal the real subordination of labor to capital. It is not surprising that New Hampshire residential construction exhibits characteristics of both primary and secondary labor markets. On the one hand, the casualness of labor market relations and the preponderance of small firms point towards the secondary market. On the other hand, the high levels of conceptual and physical skill, the ability to advance oneself in the trade, high wages and independence are generally attributed to the upper tier of the primary market. These authors seem to implicitly assume the real subordination in their analysis. But placing residential construction outside of this sphere makes it easier to explain this dichotomy. It is organized under the formal subordination of labor to capital, and this combination of small firms and highly developed worker skills was common in the era prior to the industrial revolution and the advent of specifically capitalist production.

Chapter III was dedicated to exploring the reasons for the development of the real subordination of labor to capital, and the specific conditions of housing production. The historical literature has shown a close relationship between demand stability and the development of mass

production industries. The cyclically unstable nature of the housing sector can be seen as a major cause of the lack of large-scale industrialization, which, in turn fosters a climate of greater capitalist control of the labor process. While the federal government has heavily subsidized the housing industry over the post-World War II decades, the method of debt-based mortgage finance has led to a greater destabilization of the residential construction sector since the mid-1970's. Effective state aid is not in evidence in the current period.

Additional empirical results from my case study show that other conditions necessary for the establishment of the real subordination of labor to capital have not developed in the housebuilding industry of Southeastern New Hampshire. Mass production industry was predicated upon the extension of the market. Despite the rise of a sophisticated network of transportation and communication, housing production remains essentially local. No firm in this study operated outside of a fifty mile radius. The majority of residential contractors built custom and non-standardized products. Even those larger builders who used variations on a standard design utilized traditional products and techniques. Wood, cut on site with hand or power tools, is still an imprecise material that must be "fitted." Although a degree of standardization exists in housebuilding it is not enough to allow the mere installation of interchangeable parts by unskilled workers.

Hence the conditions for the feasibility of large scale industry and the real subordination of labor to capital have not developed. Unstable demand conditions, the inability of government strategies to stabilize demand, geographically restricted markets, and non-standardized processes have given rise to a residential housing industry characterized by relatively small firms, and the continued use and development of skilled workers. The technological and organizational foundations necessary for the rise of the real subordination of labor to capital are not in evidence in the housebuilding sector of Southeastern New Hampshire.

Notes for Further Research

The theoretical and empirical analyses and interpretations have raised many questions that transcend the immediate scope of this dissertation, and call for additional research.

1. If residential construction is not organized under the conditions of specifically capitalist production, do the "laws of motion" of capitalism fully apply to this sector. More specifically, does the inexorable march of mechanization to reduce unit cost, which increases the organic composition of capital, apply to the housebuilding industry? Does the process of capitalist development inevitably result in a crisis of over production and a tendency for the rate of profit

to fall, or are builders able to voluntarily limit production? A builder who relies extensively on subcontractors and hand tools could conceivable limit production during times of generalized crisis by shifting the problem of unemployment to subcontractors. Such a builder would not have to pay high amortization on costs fixed capital that lies unutilized. If the laws of motion do operate, to what degree to they do so? In addition what are the implications for value theory in general if a major sector of the economy lies outside the domain of the self-expansion of value?

2. Another crucial question must be directed towards future developments in housing construction. Although the current organization of housebuilding in New Hampshire is the formal subordination of labor to capital, is such an organization universal? The answer to this question will require additional extensive case studies. While the bulk of New Hampshire housing is built using traditional techniques a complete analysis of the housing industry must include the role of manufactured housing. Is the labor process in these manufactured housing factories characterized by technical control, a strict division of labor

and deskilling which would signal the real subordination of labor to capital? Will mobile and modular homes eventually capture the market of "stick builders?" If so, over what time frame?

Another case study must be done in an area where the conditions of accumulation would favor a greater scale of building. Do the more extensive Western housing markets favor the development of the real subordination of labor to capital, or are conceptual control by workers, hand processes, and the formal subordination still dominant. It seems futile to generalize the conditions found in the New Hampshire housing industry to other areas of the country where different conditions of accumulation predominate. Much additional data gathering and analysis remains to be done.

Finally, some methodological questions have been raised concerning the framework of historical analysis.

3. While I am convinced that certain pre-conditions must be developed for mass production to be feasible, the degree of development necessary remains unanswered. To use the terminology of Gordon, Edwards, and Reich, do these four conditions need to be fully "consolidated" or

generalized before mass production in the housing industry occurs to a significant degree? Or, on the other hand, do these conditions need be merely "explored" by a few innovative housebuilders?

4. I have made no attempt to assess the individual impact of each of the four pre-conditions. Rather I stated the complex interaction of market extension, standardization of product and process, demand stability and effective state subsidy are necessary for the evolution of specifically capitalist production. Which of the effects, singly and in combination, is most powerful. Industries with unstable demand, such as automobiles, are mass production industries. However, their marketing networks are worldwide. I fear many years of research will be necessary to solidity this theoretical framework.

5. Casual observation shows that the period of tract building that comprised the housing industries first foray into mass production coincided with periods of demand stability, ostensibly during the 1920's and the 1950's through the 1970's. However, little research has been done to trace the changes in the labor process over the course of the business cycles. Most importantly I am

interested in the period from 1950-1972. Did the prolonged era of stability and growth promote the development of specialists and the concentration and centralization of large integrated housing firms? If so, in which geographical regions did they prosper and survive? What is now a schematic framework of historical change needs a great deal of refinement and development of detail. It is my sincere hope that such detail can be arrived at through the refinement of my theoretical perspective. My future work will be directed towards these ends.

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APPENDICES

APPENDIX A

CONTRACTOR QUESTIONNAIRE

I. GENERAL INFORMATION

1a. Company Name?
 b. How long in business?

2. Type of Business Organization?

3a. Is there outside financial control of Production
 (Who calls the shots?)
 b. Why Inc.?

4. Address?

5. You Name?

6. Position?

7. Geographical Area in which you build?
 (Probe--within what mile radius from home/office?

8. What did you (contractor) do before becoming
 a contractor?

9. How many new houses did your company build last year?

10a. How many houses did your company build last year?
 b. Which year was that?

11. What part of the housing market do you build for?
 a. Probe--Custom, tract, development.
 b. Above or below median price?

12. Do you build a particular style of housing?
 (Probe--Cape, solar, raised ranch, apartments, etc?

13. What other types of builders do you compete with?
 (Probe--Customs builders, operative builders,
 manufactured housing?

14. How have you met this competition?
 (Probe--Differentiated product, price, etc?)

15. Does your company have operations besides building new
 homes?
 (Probe--Commercial, remodel, real estate, materials,
 etc.)

16. Was your business founded with borrowed money or
 previously accumulated equity?

17. Have any of these aspects of your business significantly changed over the life of your company?

II. ORGANIZATION OF WORK, SUPERVISION, AND CONTROL

A. JOBSITE

1a. Do you employ carpenters on a full time basis?
 b. How many?
 c. Other trades?

2. What is your labor turnover?

3a. Do you have more than one crew?
 b. How many?
 c. How many carpenters per crew?

4a. Do you employ specialists or all-around carpenters (or both)?
 b. For which jobs?
 c. How Many of each?
 (Probe--How Detailed is the Division of Labor?)

5a. What kind of pay system do you use?
 (Probe Wages, piece rate, salary)
 b. Could you give a range of pay?
 c. What prompts increases or cuts in pay?

6. What is the chain of command (hierarchy of authority) in your company?

7a. About what portion of the contractor's work week is spent on the jobsite?
 b. Does he/she work with tools?

8. What are the important responsibilities of each major position of authority in your company?
 (Probe--pace, how work is done, quality control, supervision of carpenters, discipline, coordination, design, assigning tasks)

9. About what portion of the foreman's day is spent?
 a. Working with tools?
 b. Teaching?
 c. Evaluating?
 d. Disciplining?
 e. Coordinating?
 f. Other (list)?

10. Do you have a standard working day (as to length)?

11a. Does your company have a policy on being late?
  b. What is it?
  c. Conflict resolution?

12. What are your quality control standards based on?

13a. Do you ever have conflicts over quality?
  b. Based on what?
  c. How are they resolved?

14a. Do you measure the productivity of your carpenters?
  b. In what way?

15a. Has productivity measurement created any conflict?
  b. Of what kind?
  c. How is it resolved?

16a. Do you use subcontractors?
  b. For which jobs?

17. How are subs selected?

18a. Do you try to control the way your subs do their work?
  b. How?

19a. Has anyone ever walked-off one of your jobs?
  b. In response to what?
  c. How was it resolved?

20a. Have any of the above aspects changed significantly over the life of your company?
  b. Do you plan any significant changes for the near future?

B. OFFICE

1a. Do you have an office?
  b. Where is it located?

2. What functions are done in your office?
(Probe--payroll, billing, design, estimation, etc.)

3a. Do you employ a full-time, paid office staff?
  b. How large is it?

4a. Do you "subcontract" any of your office functions?
  b. Which ones?
(Probe--accounting, tax, law, architecture, drafting, etc.)

5. About what portion of the contractor's work week is spent doing office functions?

6a. Has there been any significant change in your office over the life of your business?
b. Any significant changes planned for the near future?

III. TOOLS, MECHANIZATION, AND COMPONENTS

1a. Are your carpenters required to provide their own tools?
b. Of what type?

2. What types of tools and machines do you as a contractor own and provide to your carpentry crews?

3. How do you obtain equipment you need but don't own?

4. Why do you provide the tools and equipment you use? (Probe--tradition, control, quality, etc.)

5. Do you own & use
a. Heavy Machinery?
b. Pneumatics?
c. Automatic equipment?
d. Bench tools?

6a. Do you use factory built components on your jobs?
b. Which types of components? (Probe--finish, structural)
c. For which types of jobs?

7. Why do you use components (or why not)? Explain.

8a. Do you use any types of business machines in your office?
b. Of what type?
c. For what functions?
d. Is your computer linked to machines?

9a. Any significant changes over the life of your company?
b. Any significant changes planned for the near future?

IV. SKILL LEVELS OF CARPENTERS

1. What must a carpenter be able to do for you to consider them skilled?

2a. How many of your carpenters would you consider to be skilled?
b. Skilled as a percent of total?

3a. What are the main benefits you get from using skilled carpenters?
b. Are there any negative aspects?

4. Must carpenters make an effort to increase their skill levels in order to remain employed with your company?

5. Do you provide a training program to increase to skill levels of your carpenters?
Explain.

6a. Is there a place in your company for the permanently unskilled?
(Probe--helpers or laborers not expected to advance)
b. doing what jobs?

7a. Which phases of carpentry take the most skill, in your opinion?
b. The least skill?

8. Does your pay structure vary with skill levels?
Explain.

9. Are you able to find or train enough skilled carpenters?

10a. Any significant changes over the life of your company?
b. Any significant changes planned for the near future?

V. VERTICAL INTEGRATION

1a. Do you own any of your suppliers?
b. Which ones?
c. Why did you purchase these companies?
d. Benefits?

2a. Do you have any long term contracts or exclusive agreements with any of your suppliers?
b. Which ones?
c. Benefits?

3a. Are you a land developer?
b. What percent of your business is in land?

4a. Do you have an in-house sale staff?
b. How large is it?
c. What percent of your business is in selling houses?

5a. Do you work with a particular bank?
b. Explain.

6a. Do you arrange mortgage financing for your customers?
b. Under what terms?

7. Have you ever merged with another homebuilder? (horizontal integration)
Explain.

8a. Any significant changes over the life of your company?
b. Any significant changes planned for the near future?

9. May I talk to some of your carpenters

10. Why has there been and such increase in housing costs?

CARPENTER QUESTIONNAIRE

I. GENERAL INFORMATION

1. Name?

2a. Who do you work for?
 b. How long?

3. What types of buildings do you generally work on? (Probe--Custom, tract renovation, etc.)

4. Are you personal friends with the contractor off the job?

II. ORGANIZATIONAL OR WORK, SUPERVISION, AND CONTROL

1a. Does the contractor (foreman) watch over you to see if you are doing things his way?
 b. To see if you are working fast enough?

2a. Does your contractor expect you to be self directed? (Probe--Look for next task, figure out problems on your own)
 b. What skills must you show to advance with this contractor?
 c. Does your contractor provide opportunities to learn new skills?

3a. Is your productivity measured?
 b. If so, how?
 c. How does productivity affect pay?

III. SKILL LEVELS

1. What must a carpenter be able to do for you to consider them skilled?

2. Do you consider yourself skilled?

3a. Are you an all-around carpenter?
 b. A specialist?
 c. What is your specialty?

IV. TOOLS, MECHANIZATION, AND COMPONENTS

1a. Do you own your own tools?
 b. Which ones?

2. Do you think ownership of tools is important?
   Explain.

3a. Do you install factory-built components?
 b. Which ones?

4. How has this affected your work?
   (Probe--Skill, speed, quality, pay)

V. CLASS STRUGGLE

1a. Do you ever contract jobs independently?
 b. If so, do you hire other carpenters?
 c. About what percentage of your income comes from
    independent contracting?

2. Do you want to become a contractor in the future?

3a. Are there ever conflicts over quality?
 b. If so, how are they resolved?

4a. Are there ever conflicts over the speed of work?
 b. If so, how are they resolved?

5a. Have you ever quit a carpentry job?
 b. Why?

6a. Have you ever participated in a job action?
 b. Why?
 c. How was it resolved?

APPENDIX B

EXHIBIT V. CHANGING CONTRIBUTION REQUIRED OF OPERATORS WITH INCREASES IN LEVELS OF MECHANIZATION

WORKER CONTRIBUTION* OR SACRIFICE TRADITIONALLY RECEIVING COMPENSATION	MECHANIZATION LEVELS			
	1 4	5 8	9 11	12 17
	HAND CONTROL	MECHANICAL CONTROL	VARIABLE CONTROL, SIGNAL RESPONSE	VARIABLE CONTROL, ACTION RESPONSE
PHYSICAL EFFORT	INCREASING-DECREASING	DECREASING	DECREASING-NIL	NIL
MENTAL EFFORT	INCREASING	INCREASING-DECREASING	INCREASING OR DECREASING	DECREASING-NIL
MANIPULATIVE SKILL (DEXTERITY)	INCREASING	DECREASING	DECREASING-NIL	NIL
GENERAL SKILL	INCREASING	INCREASING	INCREASING-DECREASING	DECREASING-NIL
EDUCATION	INCREASING	INCREASING	INCREASING OR DECREASING	INCREASING OR DECREASING
EXPERIENCE	INCREASING	INCREASING-DECREASING	INCREASING-DECREASING	DECREASING-NIL
EXPOSURE TO HAZARDS	INCREASING	DECREASING	DECREASING	NIL
ACCEPTANCE OF UNDESIRABLE JOB CONDITIONS	INCREASING	DECREASING	DECREASING-NIL	DECREASING-NIL
RESPONSIBILITY ‡	INCREASING	INCREASING	INCREASING-DECREASING	INCREASING, DECREASING, OR NIL
DECISION MAKING	INCREASING	INCREASING-DECREASING	DECREASING	DECREASING-NIL
INFLUENCE ON PRODUCTIVITY §	INCREASING	INCREASING-DECREASING OR NIL	DECREASING-NIL	NIL
SENIORITY	NOT AFFECTED	NOT AFFECTED	NOT AFFECTED	NOT AFFECTED

* Refers to operators and not to setup men, maintenance men, engineers, or supervisors.
‡ Safety of equipment, of the product, of other people.
§ Refers to opportunity for the worker to increase output through extra effort, skill, or judgment.

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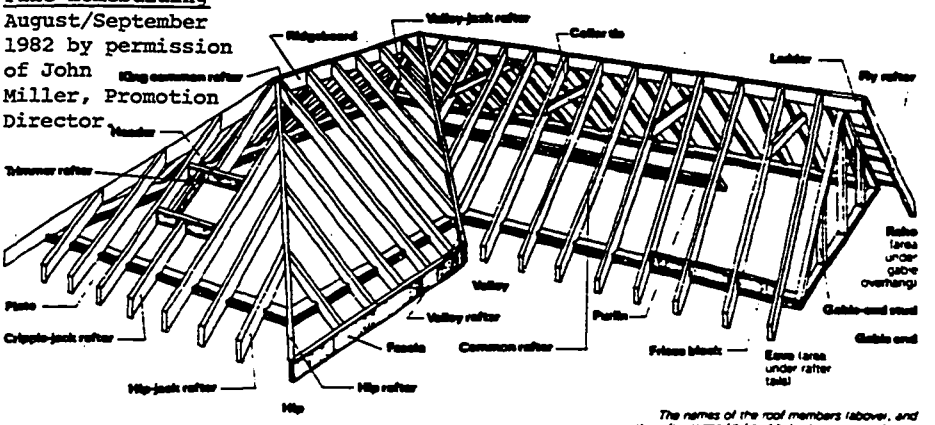
A Glossary of Roofing Terms



The names of the roof members (above), and the rafter terms (defined below) vary according to geographical region and roof style. For an explanation of how hip and gable roofs are framed, see the following article.

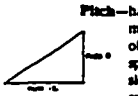
Span—the horizontal distance between the outside edges of the top plates.

Rise—the vertical distance measured from the wall's top plate to the intersection of the pitch line and the center of the ridge.

Run—the horizontal distance between the outside edge of the top plate and the center of the ridge; in most cases, half the span.

Slope—a measurement of the incline of a roof, the ratio of rise to run. It is typically expressed using 12 as the constant run.

Pitch—has become synonymous with slope in modern trade parlance. It is actually the ratio of the rise to the span. A roof with a 24-ft. span and a rise of 8 ft. has a 1-to-3 pitch. Its slope is 8 in 12. Two ways of saying the same thing.



Unit rise—the number of inches of rise per foot of run.

Unit run—this distance is always 12 in.

Common difference—the difference between the length of a jack rafter and its nearest neighboring jack on a regular hip or valley when they are spaced evenly. This is also the same measurement as the length of the first, or shortest, jack.

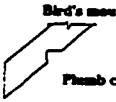
Rafter pattern—a full-scale rafter template used to mark the other rafters for cutting. It can be tried in place for fit before cutting all the rafters.

Layout tee—a short template cut from the same stock as the rafters and used for scribing repetitive plumb cuts, tail cuts and bird's mouths.

Tail—the part of a rafter that extends beyond the heel cut of a bird's mouth to form the overhang or eave.

Pitch line—an imaginary line, also called the **measuring line**, that runs parallel to the rafter edges at the height of the full depth of the heel cut on the bird's mouth. In common practice, rafters are measured along their bottom edge.

Theoretical length—the length of a rafter without making allowances for the tail or ridge reduction. Also called the **unadjusted length**.

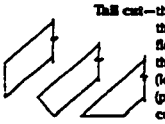


Bird's mouth—also called a **rafter seat**. It is the notch cut in a rafter that lets it sit on the double plate. It is formed by the plumb heel cut and the seat cut, which is a level line.

Plumb cut—any cut that is vertical when the rafter is in position on the roof. Also used as a reference to the top cut on a rafter where it meets the ridgeboard.

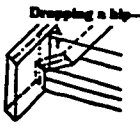
Level cut—any cut that is horizontal when the rafter is in position on the roof.

Tail cut—the cut at the outer end of the rafter. If cut at the outside edge of the double plate, it is a flush cut. All the other traditional tail cuts let the rafter overhang the plates—heel cut (level), plumb cut (vertical), square cut (perpendicular to the length of the rafter) or combination level and plumb cuts.



Side cut—also called a **cheek cut**, is the compound angle required for the proper fitting of roof members that meet in an intersection of less than 90°, and other than level. This applies to jacks that connect with hips and valleys.

Ridge reduction—rafter lengths are calculated to the center of the ridge of the roof. This doesn't take into account the thickness of the ridgeboard. This allowance reduces the theoretical length of the rafter by one-half the thickness of the ridgeboard. The layout line drawn parallel to the plumb cut that represents this allowance is called the **shortening line**.



Dropping a hip—the amount by which the bird's mouth on a hip rafter must be deepened to allow the top of the rafter to lie in the same plane as the jack and common rafters. This ensures that the roof sheathing will nail flat without having to bevel the top edges of the hip, a process known as **backing**. —*P.S.*

APPENDIX D

Cost of Equipping a 3-4 person Carpentry Crew

1	Power Mitre Box	229.00
2	Power Circular Saws @ $139.95	279.90
1	Router	109.95
1	Electric Drill (1/2" chuck)	119.95
1	Electric Drill (3/8" chuck)	59.95
1	Table Saw	599.00
1	Sabre Saw	139.95
1	Set of Drill Bits	129.95
1	Set of Router Bits	49.95
1	Grinder	59.95
1	Reciprocating Saw	149.95
1	Finish Sander	139.95
1	5' Step Ladder	49.00
1	32' Extension Ladder	185.98
		2302.43

All prices except those of Router bits and ladders are derived from Trend-lines, of Chelsea, Mass.

Router bits prices are from Sears. Ladder prices are from Hammar Industrial Supply Co., Nashua, New Hampshire.

APPENDIX E

TABLE VI-4
CHAIN OF COMMAND

Position	Small	Medium	Large	Totals
Owner as working foreman	5	1	0	6
Owner in office	1	12	2	15
Construction coordinator or V.P.	0	2	2	4
Other V.P.	0	0	2	2
Office coordinator	0	2	2	4
General superintendent	0	5	2	7
Job superintendent	0	3	1	4
Foreman	1	6	2	9

TABLE VI-5
OFFICE SPACE

Office Characteristics	Small	Medium	Large	Totals
No office	2	0	0	2
Desk in LR or BR	1	1	0	2
Office in home	2	3	0	5
Separate office building	0	9	2	11
Office at job site	0	1	1	2
Office open during business hours	0	9	2	11

TABLE VI-6
PERCENT OF CONTRACTORS' "OFFICE" WEEK

Percent	Small	Medium	Large	Totals
0-10	0	2	0	2
11-20	3	1	0	4
21-30	0	1	0	1
31-40	2	2	0	4
41-50	0	2	1	3
51-60	0	0	0	0
61-70	1	1	0	2
71-80	0	2	0	2
81-90	0	0	0	0
91-100	0	2	2	4

TABLE VI-7
SIZE OF PAID OFFICE STAFF

Number of Office Employees	Small	Medium	Large	Totals
0	5	2	0	7
1- 5	0	8	1	9
6-10	0	1	0	1
11-15	0	1	0	1
16-20	0	0	0	0
21-25	0	0	0	0
26-30	0	0	0	0
31-35	0	0	0	0
36-40	0	1	0	1
> 40	0	0	1	1

TABLE VI-8
FUNCTIONS DONE IN OFFICE

Function	Small	Medium	Large	Totals
Payroll	2	11	2	15
Billing	2	13	2	17
Purchasing/land acquisition	1	7	2	10
Design/project planning	4	9	2	15
Architecture/ drafting	1	5	1	7
Scheduling/coor- dination	2	7	2	11
Bookkeeping	3	12	2	17
Estimating/cost- ing	4	12	2	18
Customer relations	2	5	1	8
Real estate/sales	0	4	1	5
Finance/politics	0	13	2	15

TABLE VI-9
OFFICE EQUIPMENT

Equipment Type	Small	Medium	Large	Totals
Genreal office equipment	2	12	2	16
Computer	1	9	2	12
Computer linked to machines	0	0	0	0
Phone answering machines	1	4	0	5
Phone and calculator (no office)	3	1	0	4
Postage meter	0	0	1	1
Blueprint machine	0	1	0	1
Radio dispatch	0	1	0	1

TABLE VI-10
DIVERSIFICATION AND INTEGRATION

Operations other than new housing	Small	Medium	Large	Totals
Remodel and renovation	3	6	0	9
Carpentry subcontractor	2	0	0	2
Small commercial	2	3	1	6
Large commercial	0	2	2	4
Septic/wells	0	1	0	1
Swimming pools	0	1	0	1
Land development	1	13	2	16
Sales/real estate	1	5	2	8
Property magt/ rentals	0	3	1	4
Agent for builders	0	1	0	1
Supply companies	0	1	1	2
Components manufacture	0	1	1	2

TABLE VI-11
TYPES OF BUILDING

Building type	Small	Medium	Large	Totals
Custom SFD	5	10	0	15
Speculative custom SFD	1	2	0	3
Apartments/condos - MFD	0	6	1	7
Small subdivisions	1	1	0	2
Large subdivisions - tracts	0	0	2	2